

ceco



**RESIDENCE CASEMENTS
CASEMENT DOORS
ARCHITECTURAL PROJECTED WINDOWS**

**COMMERCIAL PROJECTED WINDOWS
PIVOTED WINDOWS
BASEMENT WINDOWS**

**INDUSTRIAL DOORS
CONTINUOUS WINDOWS
MECHANICAL OPERATORS**



**IN METAL BY
CONCRETE ENGINEERING COMPANY**

CONCRETE ENGINEERING COMPANY STEEL WINDOW DIVISION

CECO Steel Windows and Steel Doors are presented to Architects and Builders in this Manual form as an evidence of their wide range and of their broad adaptability to every type of building.

They represent the product of a highly specialized division of the Concrete Engineering Company . . . a nationwide institution that has been closely allied with the building industry of America for nearly a quarter of a century and possessing, within a single unit of control, extensive manufacturing resources to meet the production requirements of the largest building projects.

The financial stability of the Concrete Engineering Company is reflected in its official rating of "Over One Million Dollars — Highest Credit."

In addition to signifying a product of unquestionable quality, the name Ceco stands for a spirit of practical service. To this end, Ceco Branches are maintained at principal centers from Coast to Coast and, from each Branch, there is available the consultant service of Ceco engineers. These technicians are exclusive factory representatives; they are specialists in architectural engineering and their cooperation may be called for at any time . . . entirely without obligation.

CECO STEEL WINDOW DIVISION of CONCRETE ENGINEERING COMPANY INCORPORATED FACTORY AND SALES OFFICE 1926 South 52nd Avenue, Chicago

GENERAL OFFICES—OMAHA, NEBRASKA

OFFICES AND WAREHOUSES

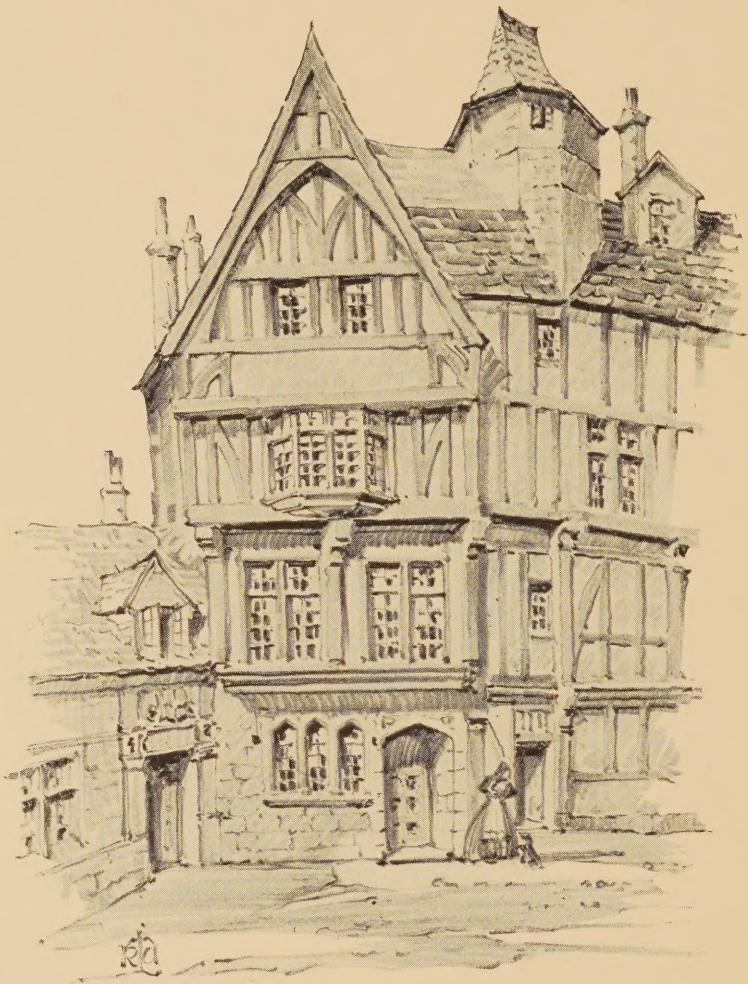
Chicago
Los Angeles
Detroit
Milwaukee
St. Louis
Houston

Kansas City
Dallas
Minneapolis
Des Moines
New York City
Washington

Oklahoma City
San Antonio
San Francisco
Oakland
Peoria
St. Paul

CONCRETE ENGINEERING COMPANY

WINDOWS OF STEEL



The manors of Old England have contributed much to the beauty of modern architecture. It was from these ancient structures with "eyes" of leaded glass set in frames of metal that America evolved the steel window of today . . . a skillful combination of architectural harmony with practical utility for better lighting and longer service.

As a leading associate of the building industry in America, the Ceco organization has applied intensive study to design and the best of engineering science to the construction of windows and doors of steel.

This Ceco development has not been restricted and a perusal of this Manual will show that every type of building, from the small home to the largest institution or commercial building project may be equipped with Ceco Steel Windows and Steel Doors in complete harmony with its architectural character, regardless of the material used in its construction.

Logically, Ceco Steel Windows and Steel Doors are designed for durability and more efficient service, but their economy is also an important consideration. In this connection, Architects and Builders will appreciate the value of Ceco's large and fully modern manufacturing resources . . . and that this same factor is their assurance of having orders promptly and accurately filled so that supplies will be on the job when they are wanted.

AT
8805
C749
1930

RESIDENCE TYPE CASEMENTS

Specifications

GENERAL

All windows shall be the Residence Type Casement windows as manufactured by the Concrete Engineering Company, Inc., of Chicago, Illinois, or approved equal, as per written approval of the architect and shall be of sizes and types as shown on architect's drawings.

MATERIAL

All sections shall be especially designed, hot-rolled, new billet steel.

All frame and ventilator members shall be special Z shaped sections and shall be of 1 1/16" depth from front to back and have a combined weight of not less than 2 lbs. per lineal foot, exclusive of fins or anchors.

Ventilator members to be rolled with a baffle providing a continuous two point weathering contact, with frame members, throughout the entire perimeter of the ventilator without the aid of loose or applied linings.

Corners of frame and ventilator members shall be mitred and electrically butt welded, with exposed surfaces at welds ground to a smooth finish.

All muntins shall be especially rolled T's with 5/8" face and a depth of 7/8" and shall be continuous between rails and stiles.

Head Drips shall be especially formed members.

CONSTRUCTION

At muntin intersections there shall be a mechanical joint rigidly interlocking the muntins flush with inside face.

A continuous drip shall be provided at transom bar and at head of all openings where the swing leaves extend the full height of opening.

Horizontal and vertical mullions to be provided where necessary to be of hot-rolled T shape members.

Side hinged ventilators to open out shall be hung on extension cleaning hinges of mild rolled steel sections. One hinge leaf securely welded to frame, the other leaf riveted to ventilator. Transom ventilator shall be hinged at top to open out and shall be equipped with close-up friction hinges. Sill ventilators shall be bottom hinged to open in and shall be equipped with close-up friction hinges.

All casements to be provided with open holes in both jambs near head for standard shade and drapery brackets. (Brackets not furnished by Concrete Engineering Company.)

HARDWARE

All hardware shall be "water-rolled" finish, attractively and accurately designed for the operation required. (Optional) All styles and types of handles and operating hardware may be

obtained in solid bronze at a slight increase in cost. Where screens are specified, Rotary (worm and gear) under-screen type operators shall be furnished.

ERCTION

Casements shall be set plumb and true, and mastic applied to provide weather-tight union between building construction, mullions and casement frames. (Window manufacturer to provide 1 lb. of mastic for each 10'0" of casement perimeter.)

Locking handle and Rotary operator shall be shipped unattached, to be applied after erection in accordance with manufacturer's directions.

The locking handle keeper and channel guide shall be attached by the manufacturer before shipment.

Provide either clip anchors, wood screws, continuous fins or redwood surrounds for anchoring casement frames to building construction as shown by architect's drawings.

PAINTING

All casements shall receive one coat of gray mineral paint by the manufacturer before shipment.

(Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.)

(Note: Windows erected by the Concrete Engineering Company will be field painted by them if specified.)

GLASS AND GLAZING

(Note: Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.)

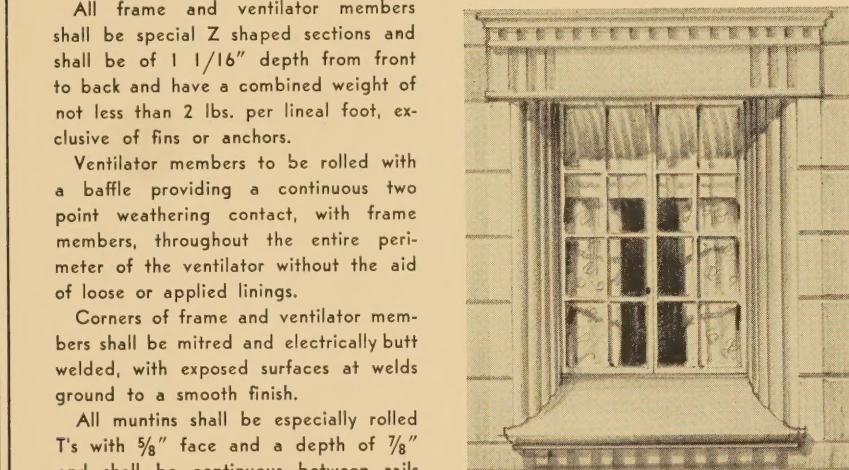
All windows shall be glazed from the outside, all glass being set in a bed of putty and secured by glazing clips furnished by the window manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

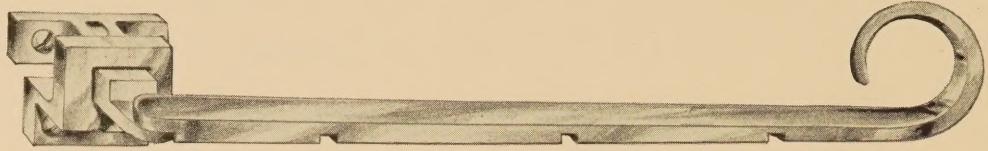
(Note: Specify types of glass, single strength glass is not recommended.)

SCREENS

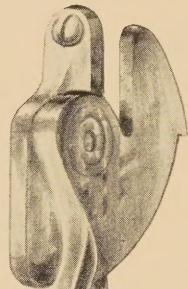
Screens for all open out ventilators shall be flat type applied on the inside of window frame. Each screen shall be easily attached or removed from the inside and shall permit complete operation (Opening, Closing, Locking) of ventilators without touching screen. Screens for open in ventilators shall be flat type applied on the outside of frame and shall be readily attached or removed.



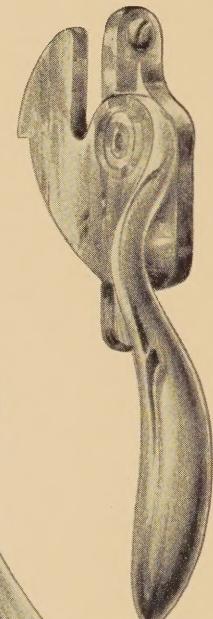
CONCRETE ENGINEERING COMPANY



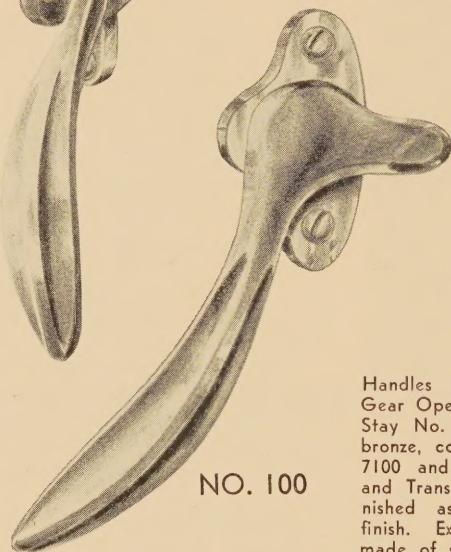
NO. 500
NO. 7500



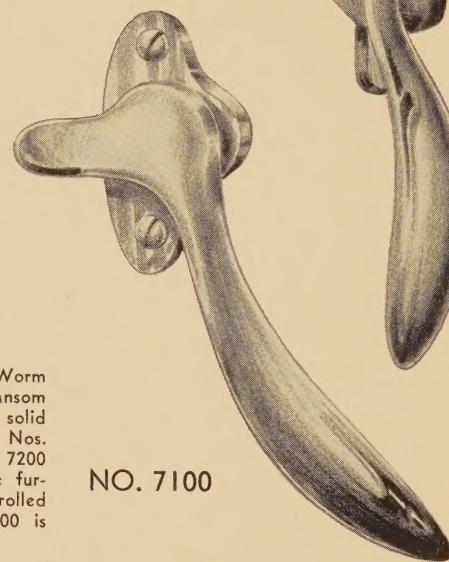
NO. 120



NO. 7120



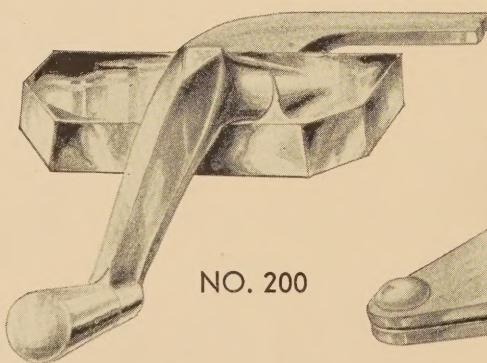
NO. 100



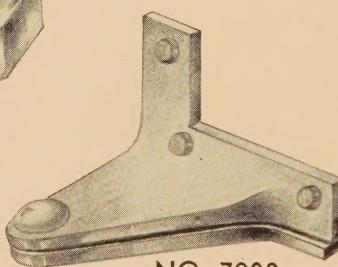
NO. 7100

NOTES

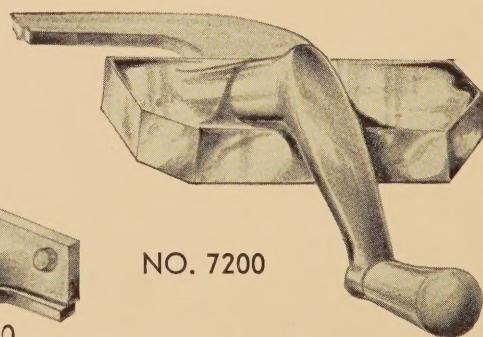
Handles Nos. 100 and 120; Worm Gear Operator No. 200, and Transom Stay No. 500 are furnished in solid bronze, coinage finish. Handles Nos. 7100 and 7120, Operator No. 7200 and Transom Stay No. 7500 are furnished as standard in water-rolled finish. Extension Hinge No. 7900 is made of steel.



NO. 200



NO. 7900

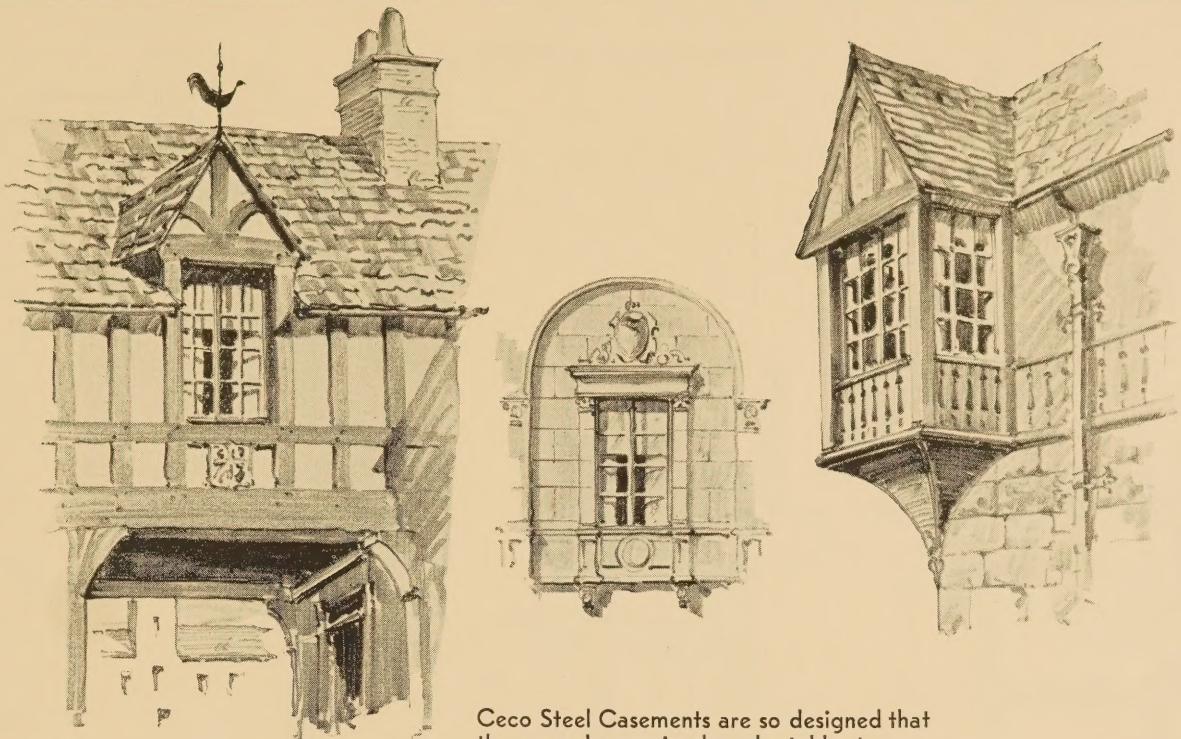


NO. 7200

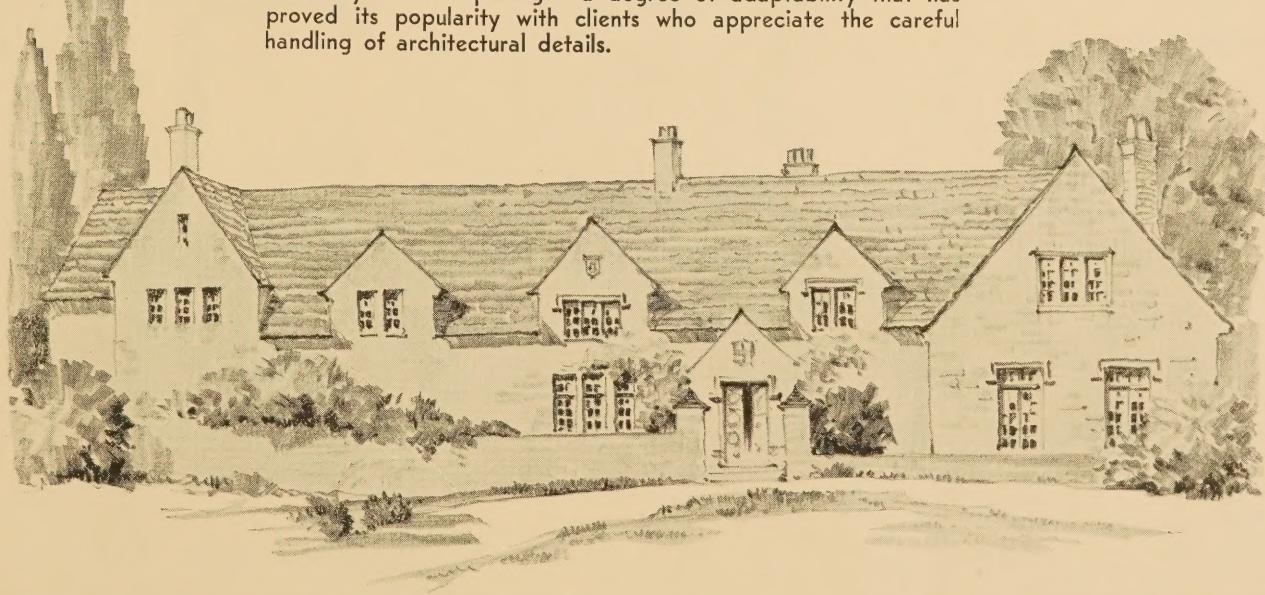
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RESIDENCE CASEMENTS
HARDWARE

PLATE
I



Ceco Steel Casements are so designed that they are harmoniously adaptable to any style of architecture. Where the type of building makes it desirable the vertical muntins may be omitted to conform to architectural design. This particular type of construction in Ceco Steel Casements is in line with the desire of architects for the ultimate in harmonious detail without sacrifice in the strength or efficiency of the opening—a degree of adaptability that has proved its popularity with clients who appreciate the careful handling of architectural details.

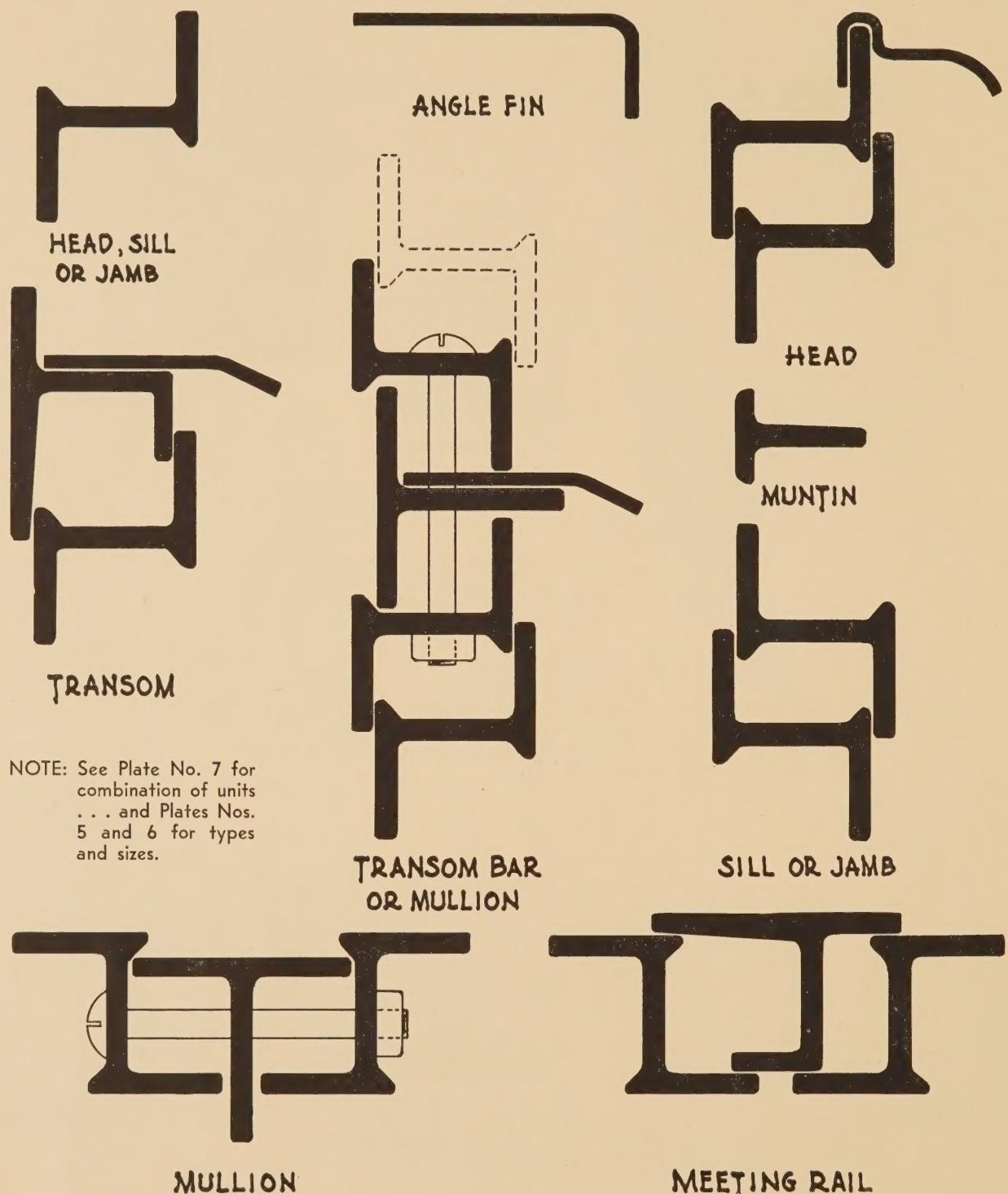


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RESIDENCE CASEMENTS
WINDOW TREATMENTS

PLATE
2

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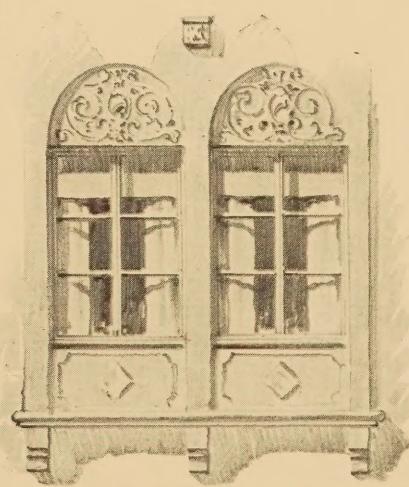
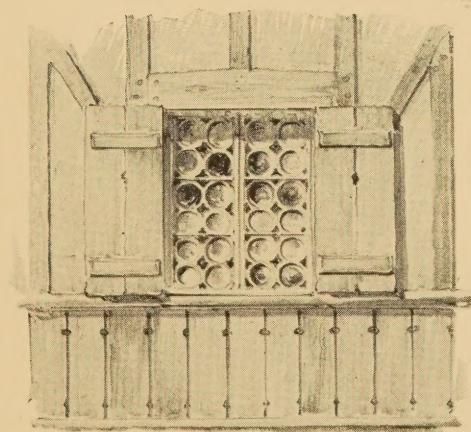
RESIDENCE CASEMENTS
FULL SIZE SECTIONS

PLATE
3



In Ceco Steel Casements, muntins may be omitted when it is desired to use leaded glass of any pattern or for the use of single lights of polished plate or other glass.

The flexibility in the design of Ceco Steel Casements meets the modern demand of architects for distinction and close harmony in the appearance of the finished building.



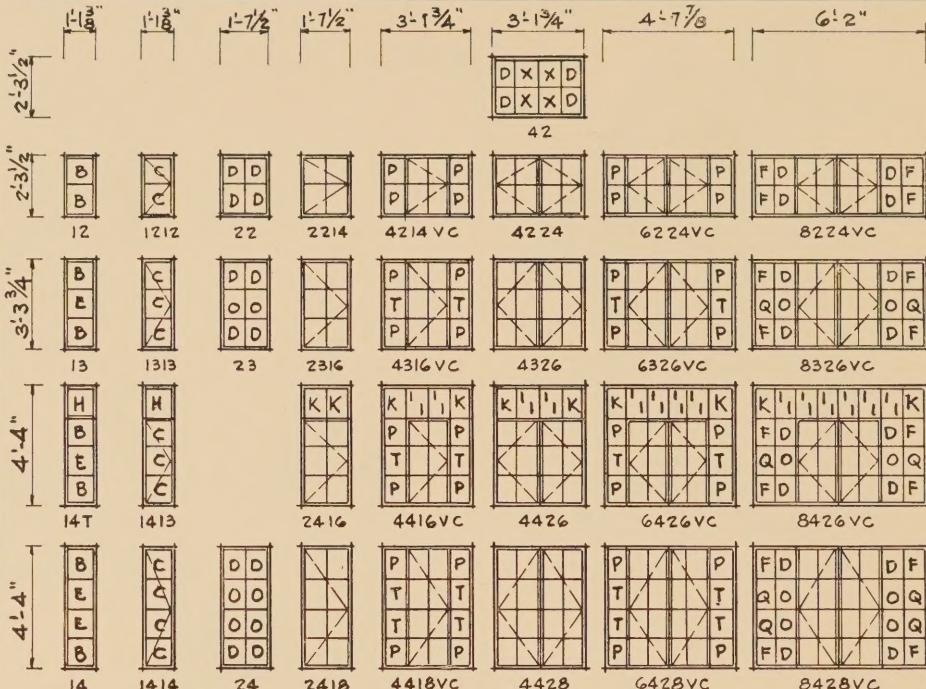
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RESIDENCE CASEMENTS WINDOW TREATMENTS

PLATE
4

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GLASS SIZES	
PANE SIZE	PANE SIZE
A $7\frac{7}{8}'' \times 11\frac{7}{8}''$	S $7\frac{7}{8}'' \times 10\frac{3}{16}''$
B $11\frac{3}{8}'' \times 12\frac{9}{16}''$	T $8\frac{3}{8}'' \times 11\frac{1}{8}''$
C $10\frac{1}{8}'' \times 11\frac{1}{8}''$	U $7\frac{7}{8}'' \times 9\frac{3}{16}''$
D $8\frac{9}{16}'' \times 12\frac{9}{16}''$	V $8\frac{9}{16}'' \times 9\frac{1}{8}''$
E $11\frac{3}{8}'' \times 11\frac{1}{8}''$	W $11\frac{3}{8}'' \times 11\frac{1}{8}''$
F $8\frac{1}{2}'' \times 12\frac{9}{16}''$	X $8\frac{1}{2}'' \times 12\frac{9}{16}''$
G $11\frac{3}{8}'' \times 10\frac{3}{8}''$	Y $8\frac{3}{8}'' \times 11\frac{1}{8}''$
H $11\frac{3}{8}'' \times 11\frac{1}{8}''$	Z $8\frac{1}{2}'' \times 10\frac{3}{8}''$
I $11\frac{3}{8}'' \times 11\frac{1}{8}''$	AA $8\frac{9}{16}'' \times 10\frac{3}{8}''$
J $9\frac{7}{8}'' \times 11\frac{1}{8}''$	BB $11\frac{3}{8}'' \times 10\frac{3}{8}''$
K $8\frac{9}{16}'' \times 11\frac{1}{8}''$	CC $8\frac{9}{16}'' \times 10\frac{3}{8}''$
L $8\frac{9}{16}'' \times 10\frac{3}{8}''$	DD $8\frac{9}{16}'' \times 10\frac{3}{8}''$
M $8\frac{9}{16}'' \times 11\frac{1}{8}''$	EE $8\frac{9}{16}'' \times 9\frac{3}{16}''$
N $7\frac{7}{8}'' \times 9\frac{3}{16}''$	FF $8\frac{3}{8}'' \times 10\frac{3}{8}''$
O $8\frac{9}{16}'' \times 11\frac{1}{8}''$	GG $8\frac{3}{8}'' \times 10\frac{3}{8}''$
P $8\frac{3}{8}'' \times 12\frac{9}{16}''$	HH $8\frac{9}{16}'' \times 11\frac{1}{8}''$
Q $8\frac{1}{2}'' \times 11\frac{1}{8}''$	II $8\frac{9}{16}'' \times 11\frac{1}{8}''$
R $8\frac{1}{2}'' \times 11\frac{1}{8}''$	JJ $8\frac{9}{16}'' \times 11\frac{1}{8}''$
LIGHTS NOT LETTERED ARE SIZE "A"	
LIGHTS IN CURVED HEADS TO TEMPLATE.	



NOTES

Sizes shown on Plates Nos. 5 & 6 are opening dimensions and are $\frac{1}{4}$ " larger than window sizes. Nothing need be added for steel mullions.

Where mullions are used, to obtain opening dimensions, add together opening dimensions of the specific windows to be combined.

All casements are viewed from the outside. Handing of casements is determined by location of hinges. Hinged at right is a right hand casement, hinged at left is a left hand casement.

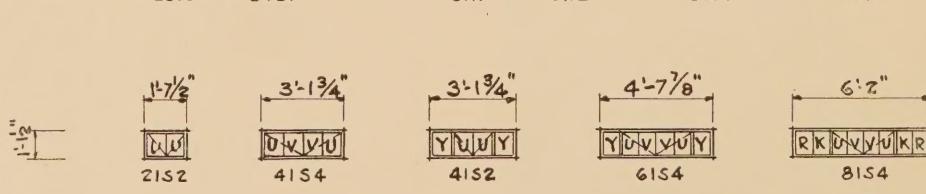
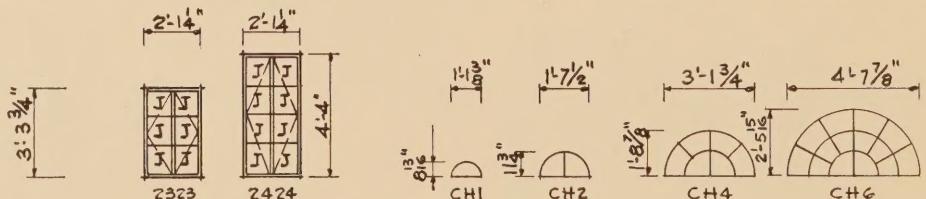
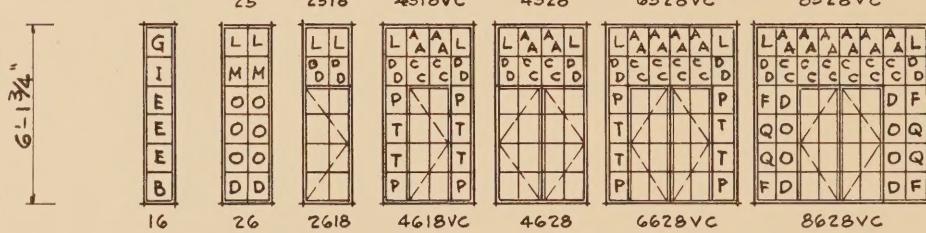
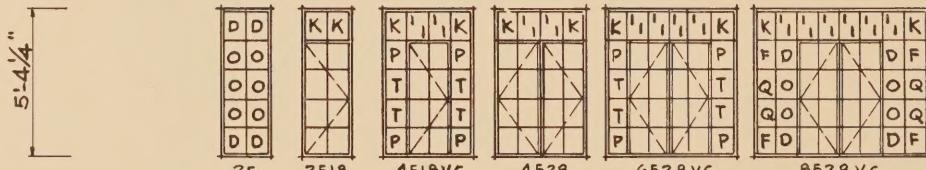
All casements are set in mastic cement.

For casement doors, sidelights, transom types and sizes see Plate number 16. All vents swing outward except those marked "/*".

VC=Ventilator in center.

TH=Top hung vent.

CH=Circular head.

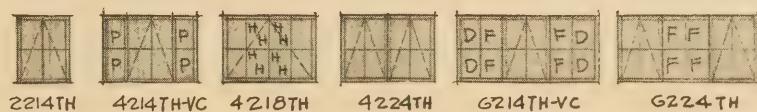
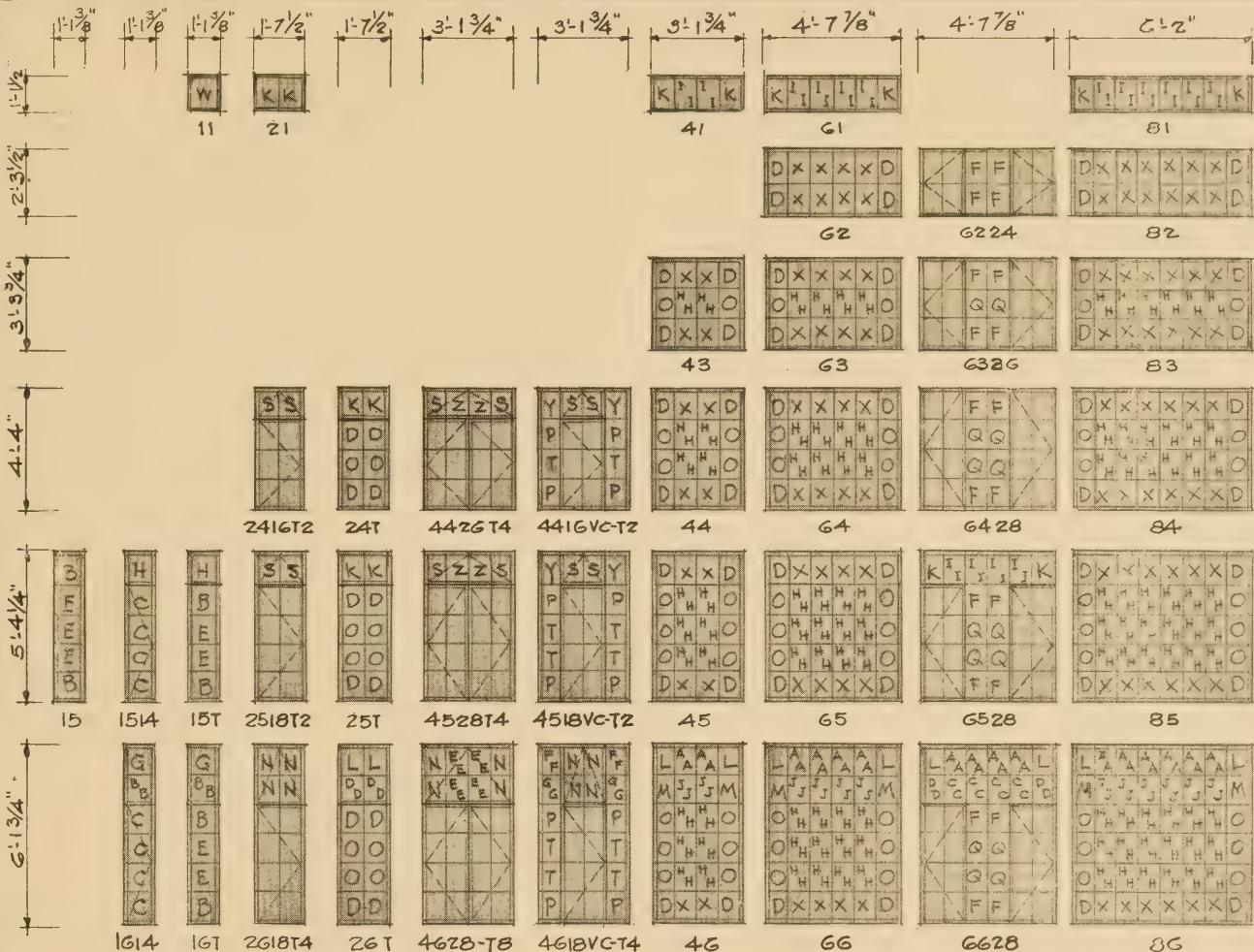


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RESIDENCE CASEMENTS
WAREHOUSE STOCK TYPES

PLATE
5

CONCRETE ENGINEERING COMPANY



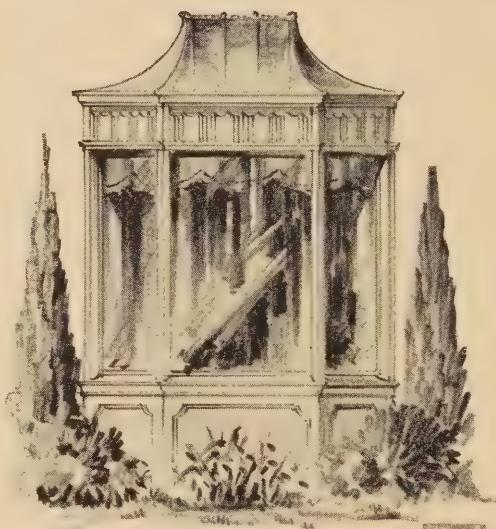
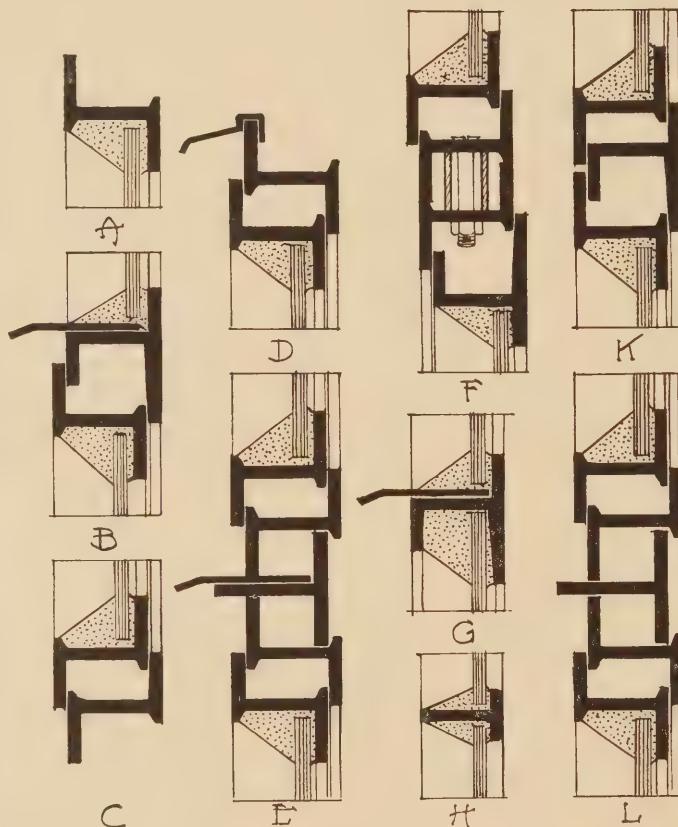
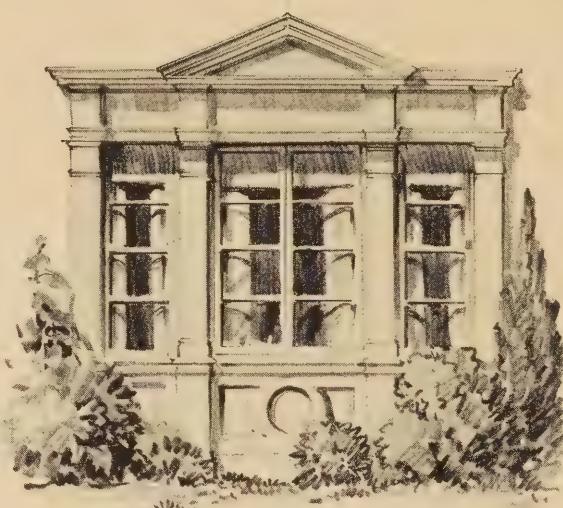
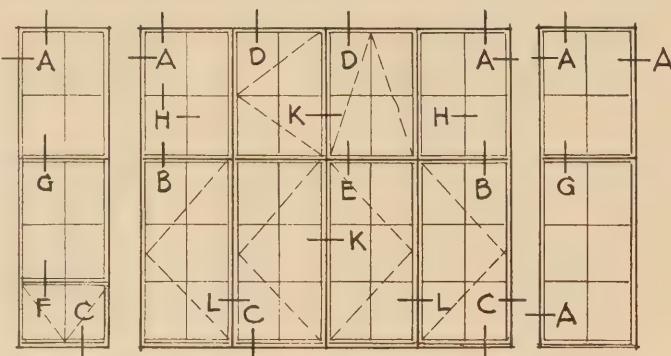
GLASS SIZES AND NOTES ARE SHOWN ON PLATE NO.5

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RESIDENCE CASEMENTS STANDARD TYPES

PLATE
6

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COMBINATION DETAILS

The typical elevations and details shown above are submitted to show various combinations made possible by using Ceco sections. All types are available with or without muntins.

WINDOWS WITHOUT MUNTINS

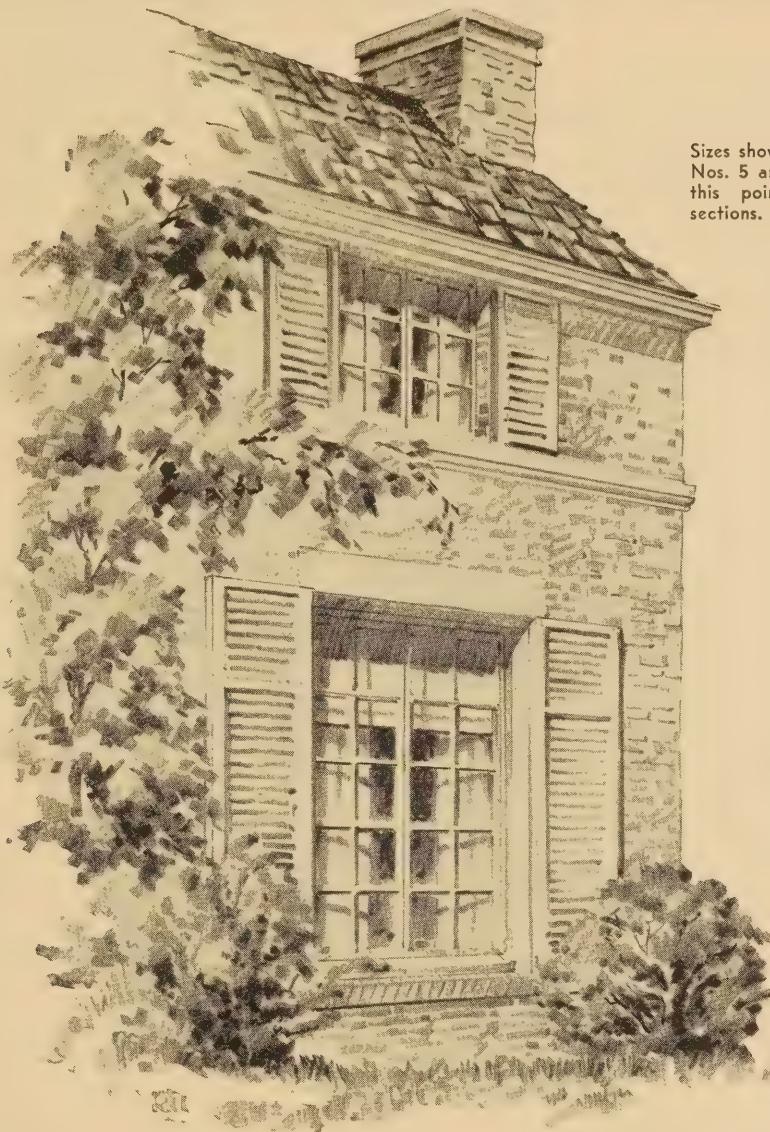
Muntins may be omitted in windows up to certain size. Ceco engineers have met the increasing demand for windows without muntins by the designer who wishes to follow the modern trend in window design. Special types of windows may be had at a slightly extra cost upon special order.

Ceco

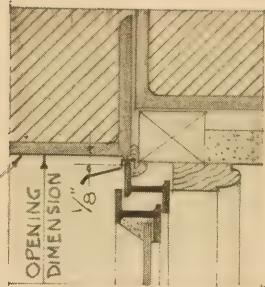
**RESIDENCE CASEMENTS
INSTALLATION DETAILS**

PLATE
7

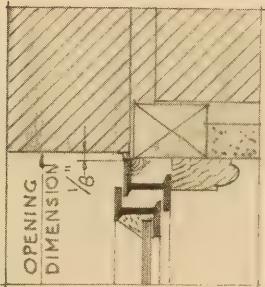
CONCRETE ENGINEERING COMPANY



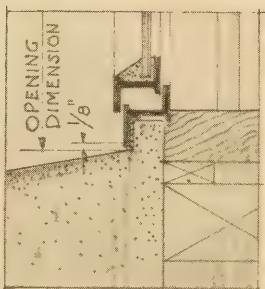
Sizes shown on Plate Nos. 5 and 6 are to this point for all sections.



HEAD



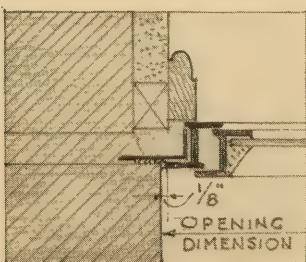
JAMB



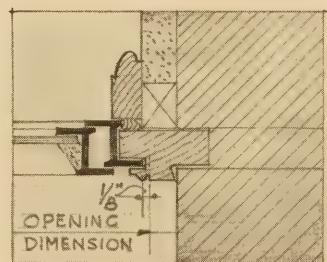
SILL

NOTES

Set all casements in Mastic Cement where they come in contact with building work and Mullions and caulk all casement frames on outside. The opening dimensions are $\frac{1}{4}$ -inch larger than window sizes. Use opening dimensions for multiple units. Nothing need be added for steel Mullions.



JAMB
Continuous Angle



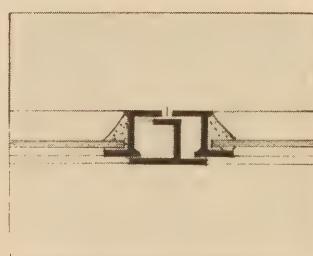
JAMB
Wood Surround

ceco

RESIDENCE CASEMENTS SOLID BRICK INSTALLATION DETAILS

PLATE
8

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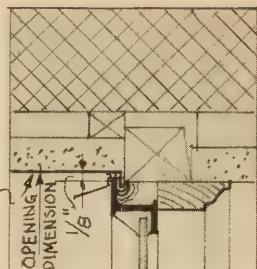


MEETING RAIL

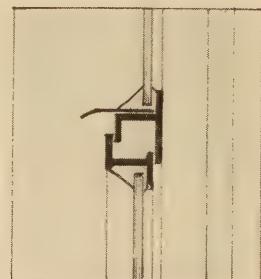
NOTES

Set all casements in Mastic Cement where they come in contact with building work and Mullions and caulk all casement frames on outside. The opening dimensions are $\frac{1}{4}$ " larger than window sizes. Use opening dimensions for multiple units. Nothing need be added for steel Mullions.

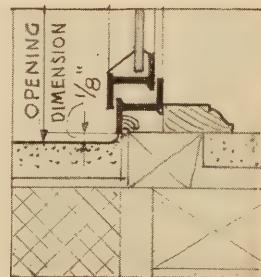
Sizes shown on Plate Nos. 5 and 6 are to this point for all sections.



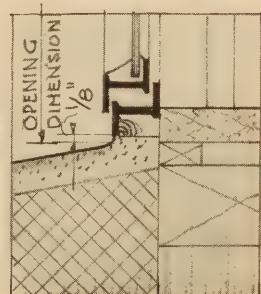
HEAD



TRANSOM



JAMB



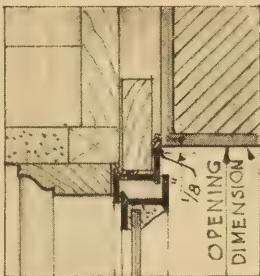
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Ceco

RESIDENCE CASEMENTS STUCCO INSTALLATION DETAILS

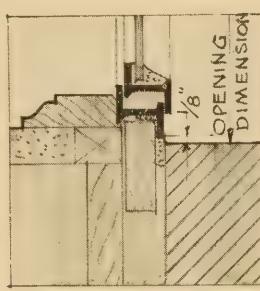
PLATE
9

CONCRETE ENGINEERING COMPANY

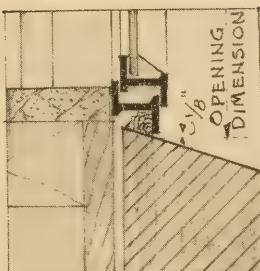


HEAD

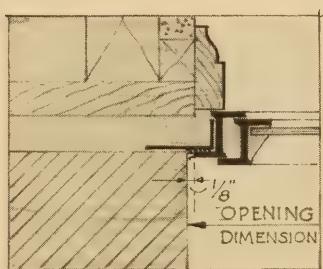
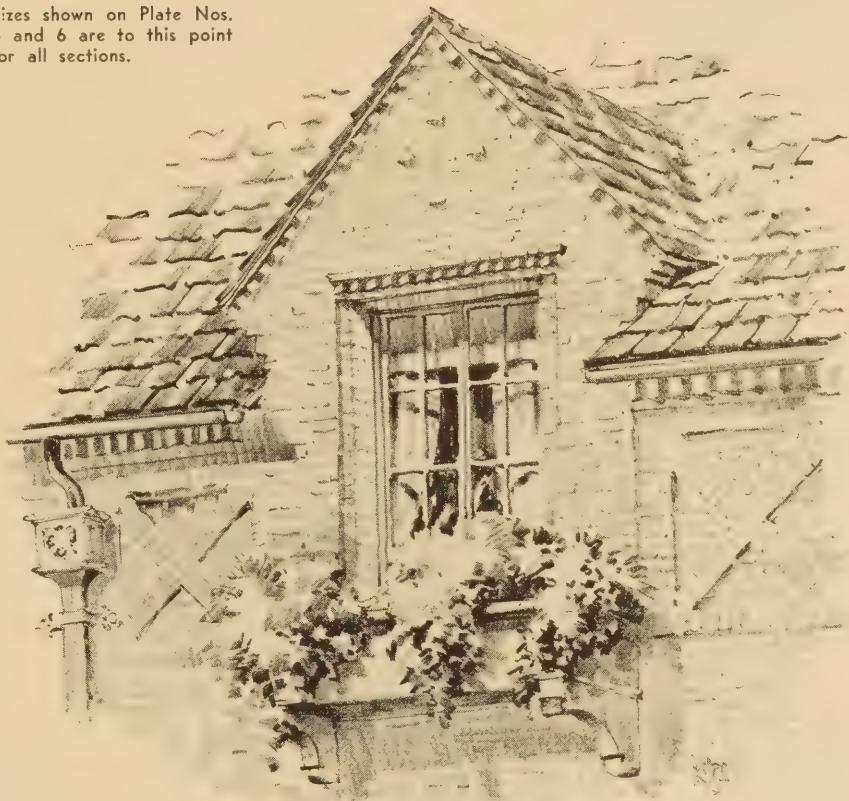
Sizes shown on Plate Nos.
5 and 6 are to this point
for all sections.



JAMB



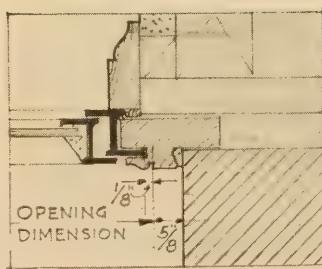
SILL



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NOTES

Set all casements in Mastic Cement where they come in contact with building work and Mullions and caulk all casement frames on outside. The opening dimensions are $\frac{1}{4}$ " larger than window sizes. Use opening dimensions for multiple units. Nothing need be added for steel Mullions.



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RESIDENCE CASEMENTS
BRICK VENEER INSTALLATION DETAILS

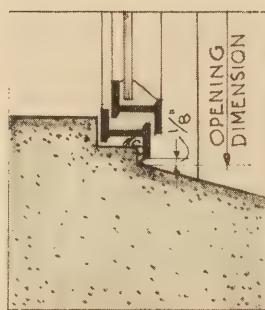
PLATE
10

CONCRETE ENGINEERING COMPANY

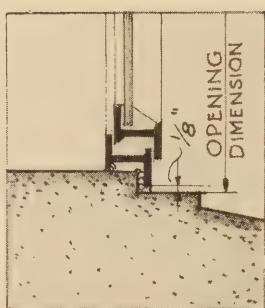
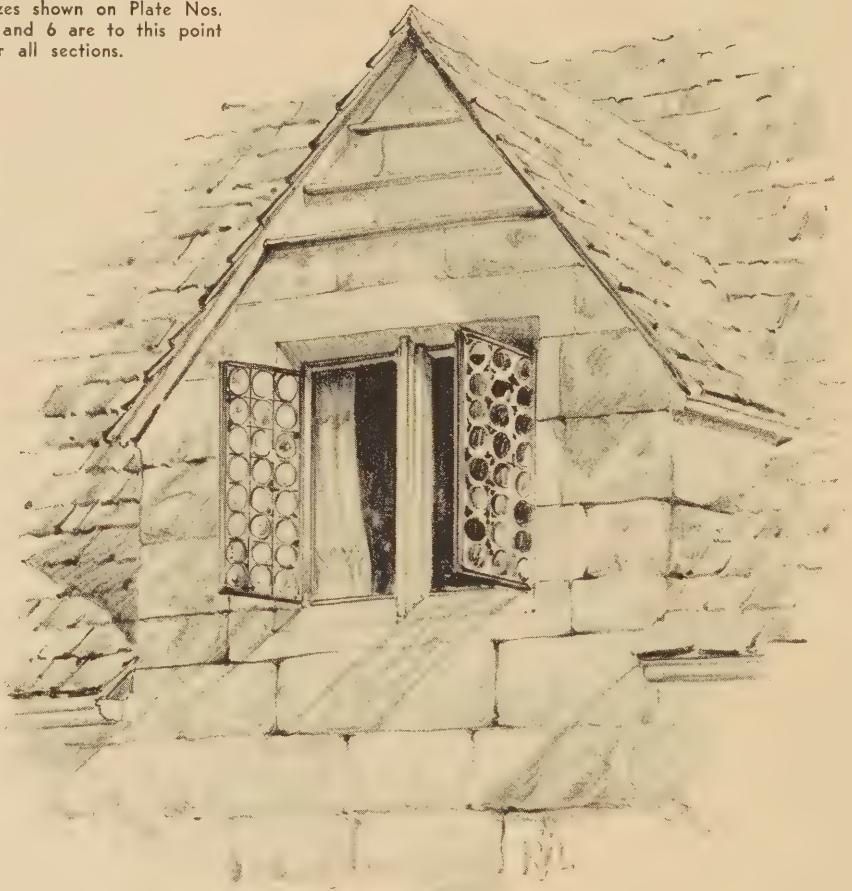


HEAD

Sizes shown on Plate Nos.
5 and 6 are to this point
for all sections.



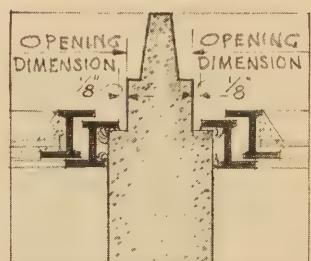
JAMB



SILL

NOTES

Set all casements in Mastic Cement where they come in contact with building work and Mullions and caulk all casement frames on outside. The opening dimensions are $1/4$ " larger than window sizes. Use opening dimensions for multiple units. Nothing need be added for steel Mullions.

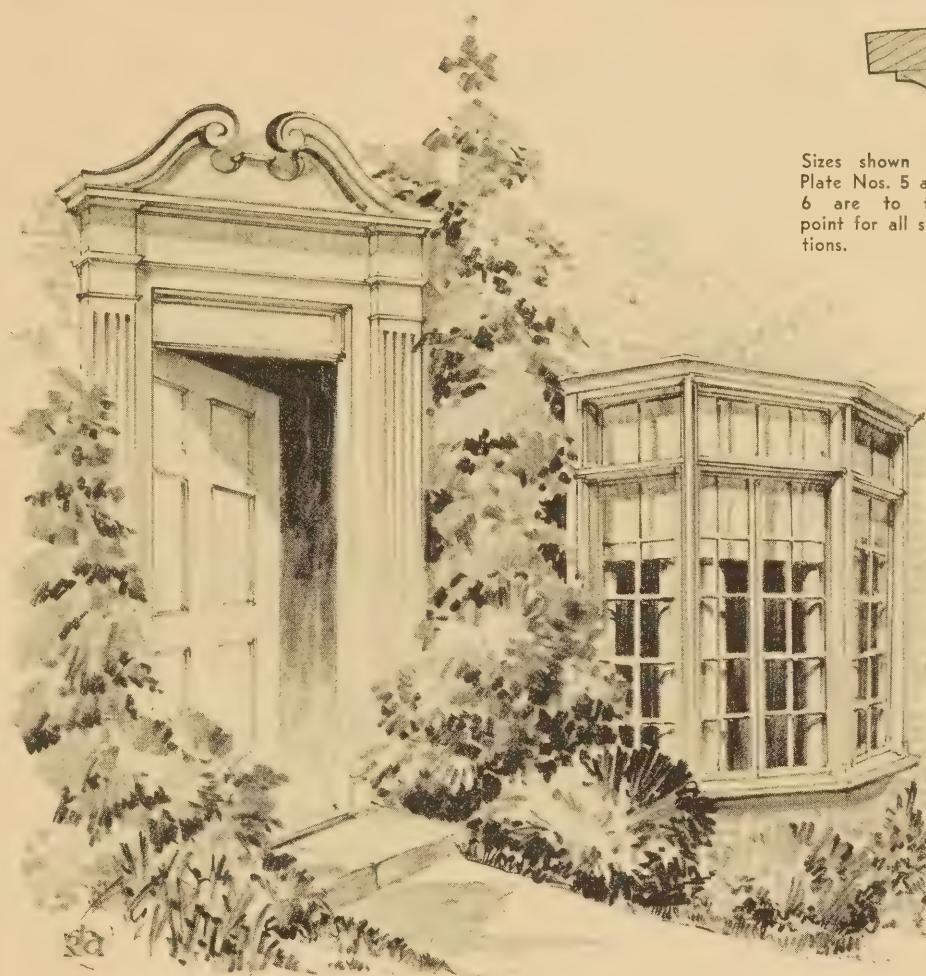


MULLION

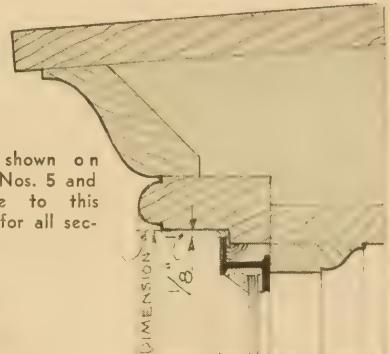
Ceco

RESIDENCE CASEMENTS
STONE INSTALLATION DETAILS

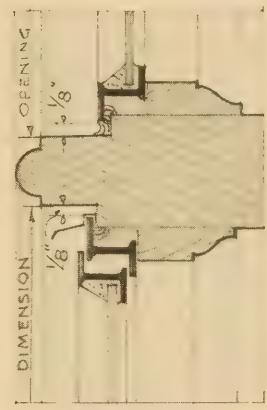
PLATE
11



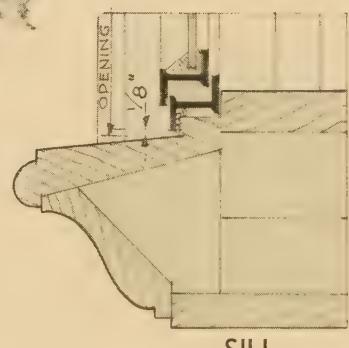
Sizes shown on
Plate Nos. 5 and
6 are to this
point for all sec-
tions.



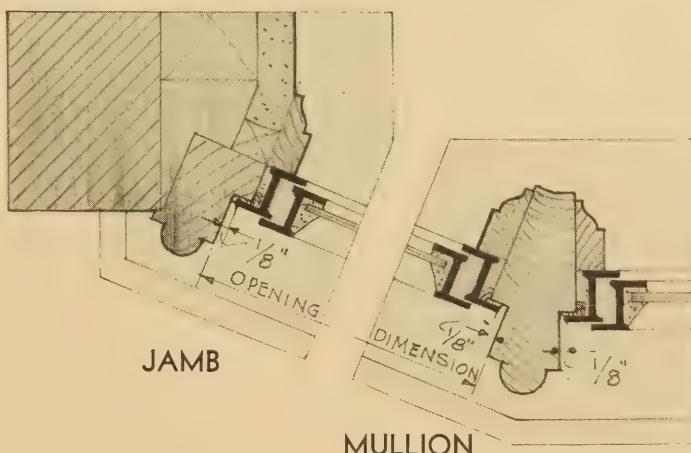
HEAD



TRANSOM



SILL



NOTES

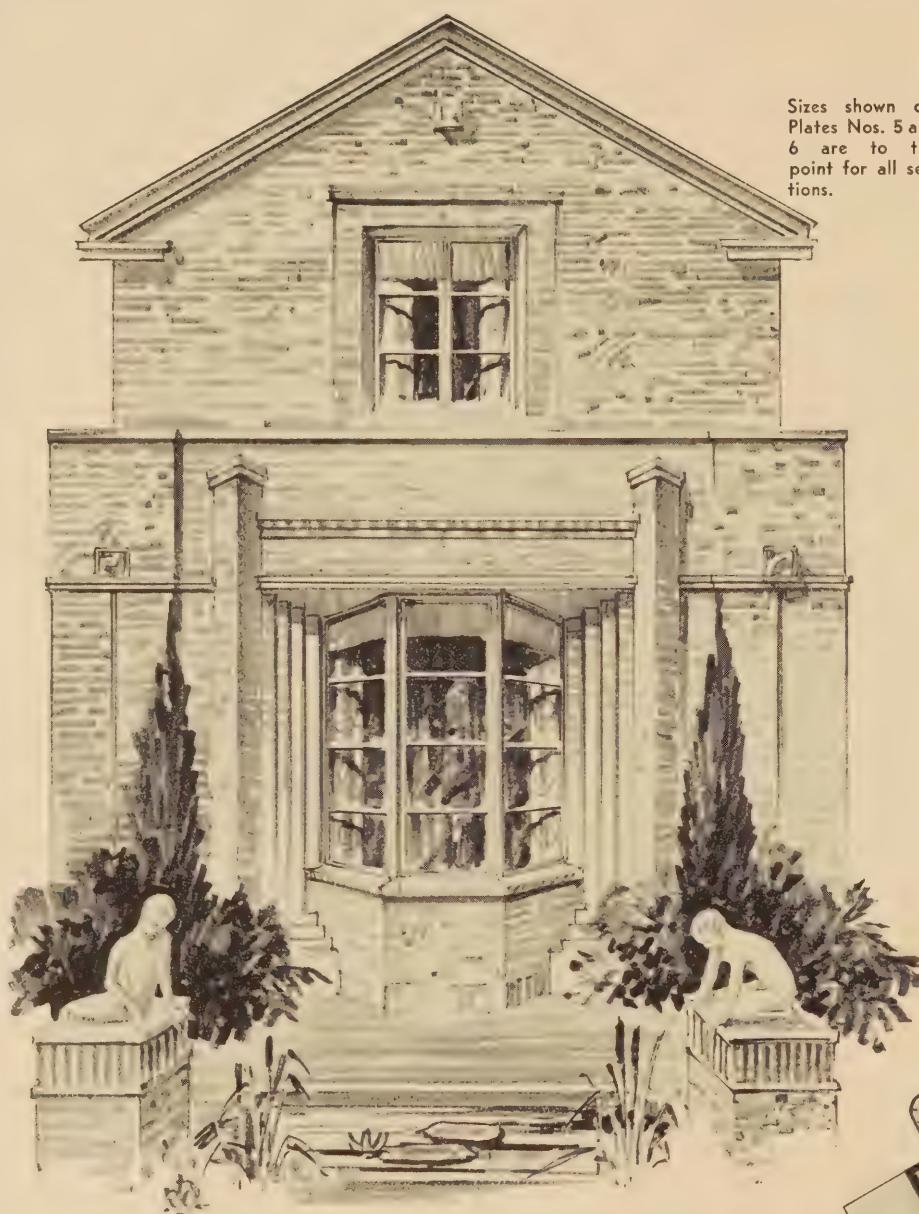
Set all casements in Mastic Cement where they come in contact with building work and Mullions and caulk all casement frames on outside. The opening dimensions are $1/4$ " larger than window sizes. Use opening dimensions for multiple units. Nothing need be added for steel Mullions.

Ceco

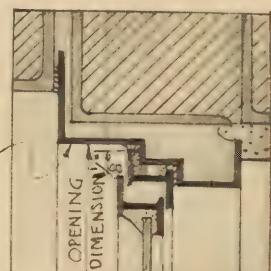
RESIDENCE CASEMENTS
WOOD INSTALLATION DETAILS

PLATE
12

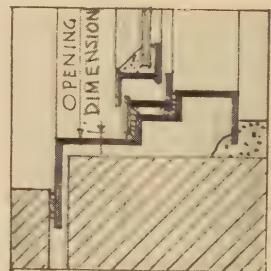
CONCRETE ENGINEERING COMPANY



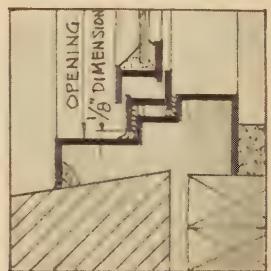
Sizes shown on
Plates Nos. 5 and
6 are to this
point for all sec-
tions.



HEAD



JAMB



SILL

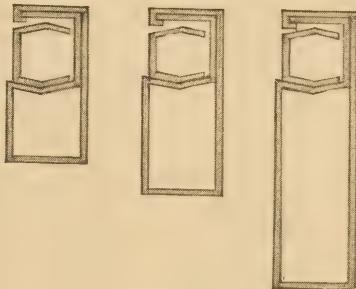
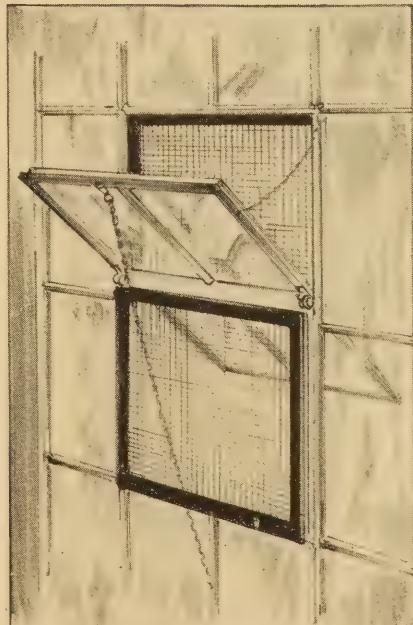
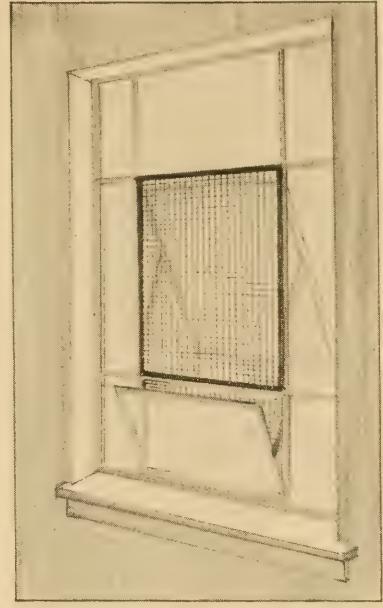
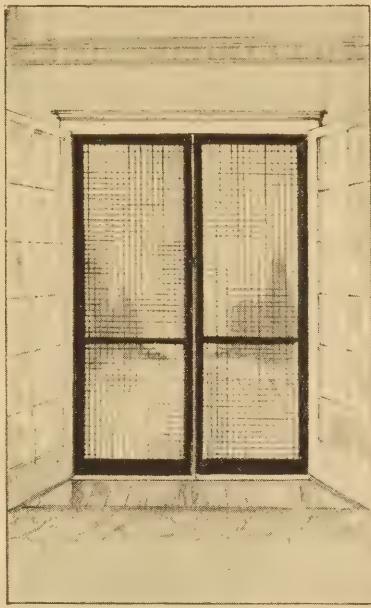
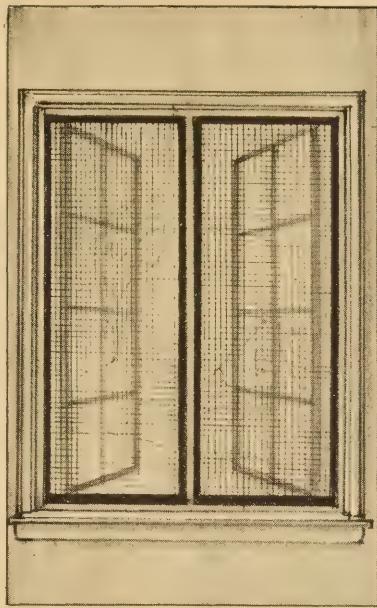


MULLION & JAMB

Ceco

RESIDENCE CASEMENTS
SUBFRAME INSTALLATION DETAILS

PLATE
13



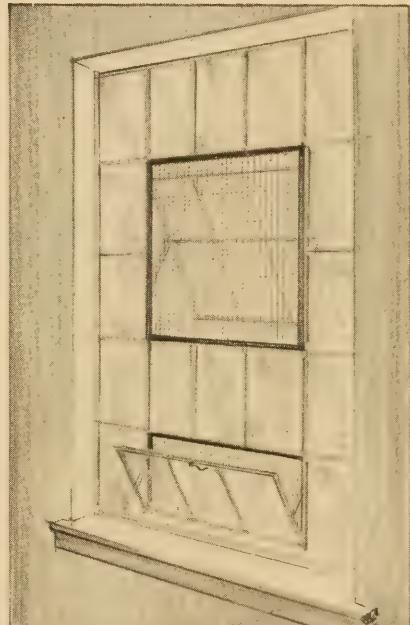
5/8" type— $5/8" \times 7/16"$

1" type— $1-1/16" \times 7/16"$

1 1/2" type— $1\frac{1}{2}'' \times 7/16"$

The above are typical installations showing CECO Rewirable Metal Frame Screens, which are manufactured with electro-galvanized steel, bronze, or aluminum frames. Sixteen mesh bronze or aluminum wire screen cloth is used. CECO Metal Frame Screens are available for all types of window and door openings.

Please write for the Ceco Screen Catalog, which gives complete information on Metal Frame Insect Screens.

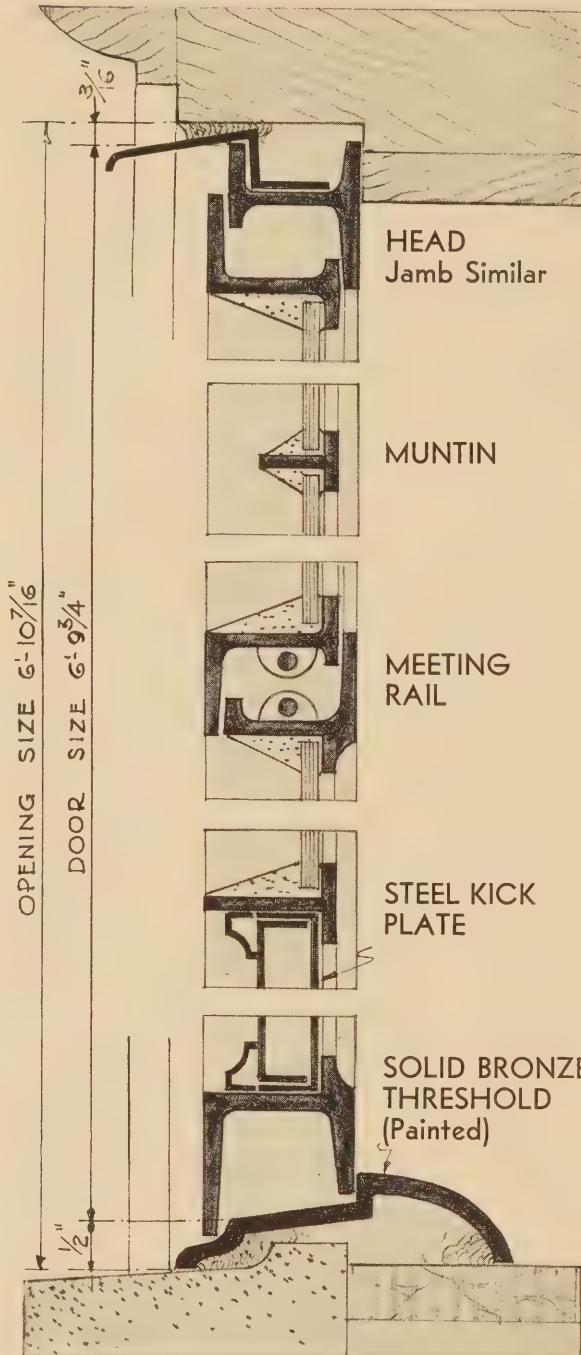


Ceco

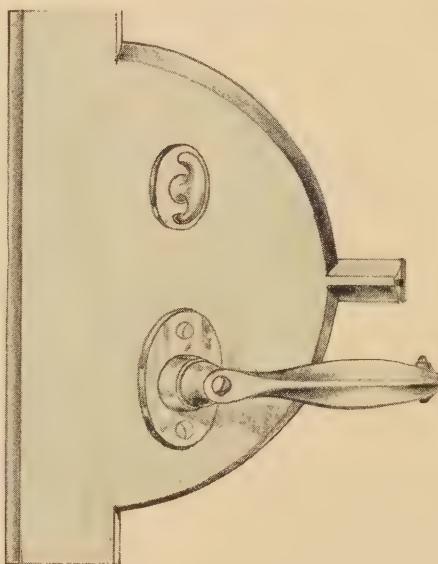
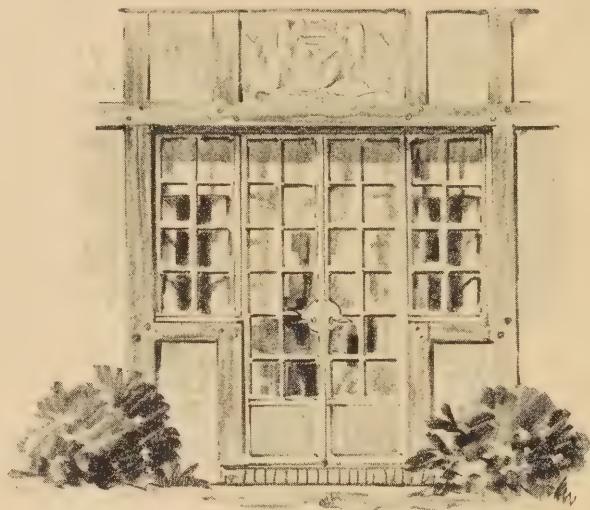
METAL FRAME SCREENS
GENERAL DESCRIPTION

PLATE
14

CONCRETE ENGINEERING COMPANY



Detail above shows standard outswinging door. Doors swinging inward may be had on special order with double rabbed threshold furnished. The scale of this detail is one-half of full size.



HARDWARE

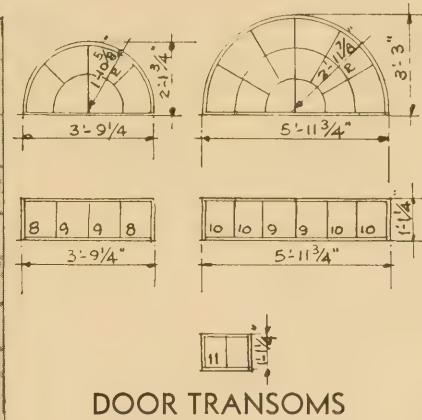
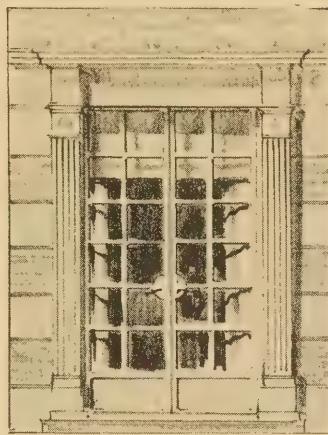
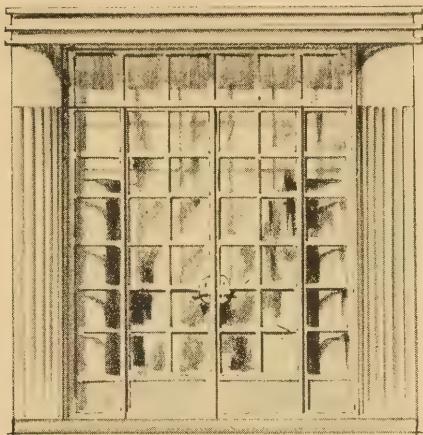
Standard doors swing out and hardware requirements include: hanging of each leaf with three-butts; friction adjuster at the head; concealed top and bottom bolts for inactive leaf; lock set with bronze lever handles operating concealed rods to lock doors at top, bottom and center; provision for night latch on inside of lock set.

ceco

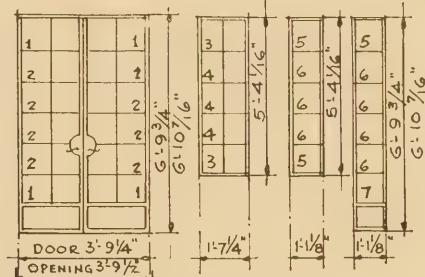
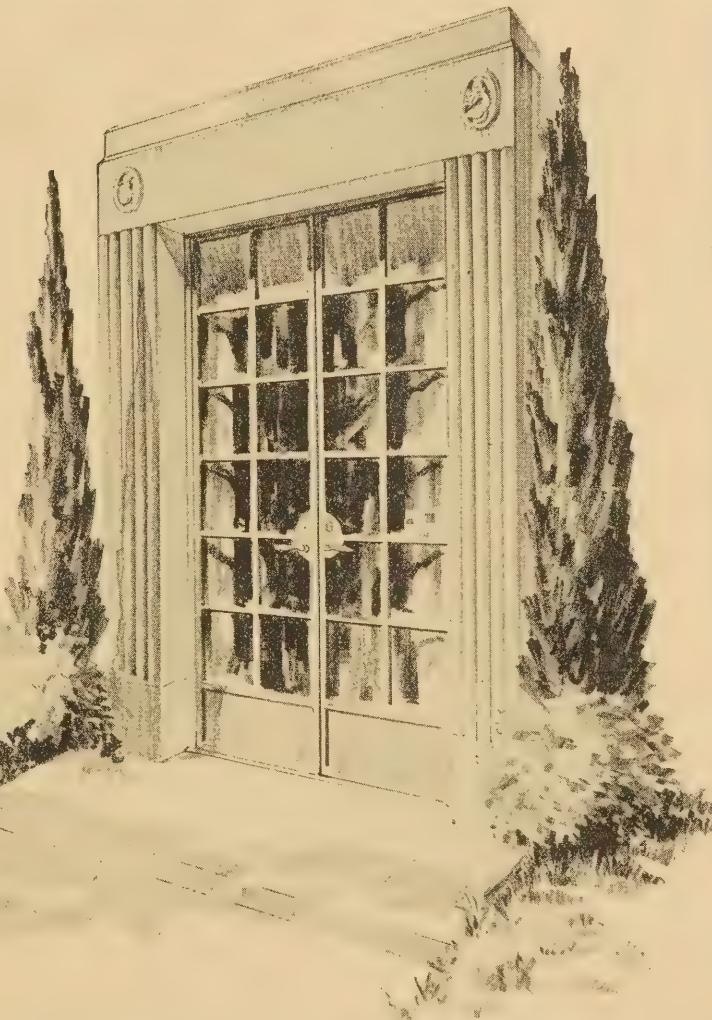
**CASEMENT DOORS
SECTION AND DETAILS**

PLATE
15

CONCRETE ENGINEERING COMPANY



DOOR TRANSOMS



DOOR AND SIDELIGHTS

GLASS SIZES			
PANE	SIZE	PANE	SIZE
1	10" x 11 3/4"	7	10 3/16" x 11 5/8"
2	10" x 11 5/16"	8	10 1/4" x 10 5/16"
3	8" x 12 1/16"	9	10 7/16" x 10 5/16"
4	8" x 11 15/16"	10	11 5/8" x 10 5/16"
5	10 3/16" x 12 1/16"	11	8" x 10 5/16"
6	10 3/16" x 11 15/16"		

SHAPED PANES TO TEMPLATE.

NOTES

Casement Doors are made of Intermediate Casement sections; door side lights and transoms are made of Residence Casement sections. Door muntins are arranged to line up with standard casements when used as side lights. Thresholds are not required for interior doors between rooms having the same floor level. Doors swing out only. Muntins may be omitted with the exception of those framing the lock sets.

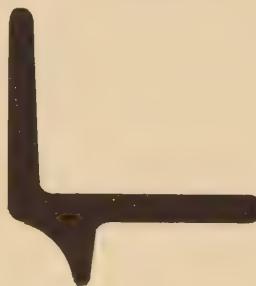
Bronze butt hinges, cylinders for mortise lock, bronze threshold, dummy lock sets for inactive leaf and panic bolt hardware will be furnished at extra cost.

Ceco

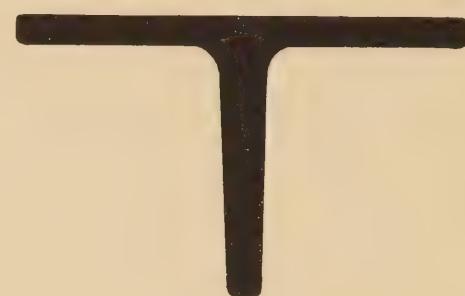
**CASEMENT DOORS
INSTALLATION DETAILS**

PLATE
16

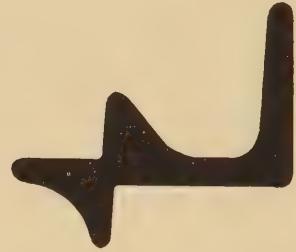
CONCRETE ENGINEERING COMPANY



NO. 10



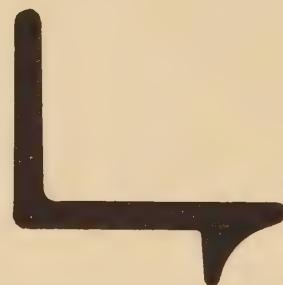
NO. 8



NO. 4



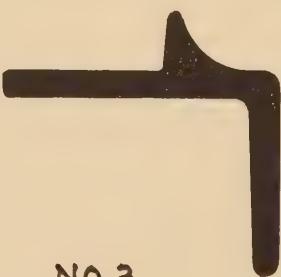
NO. 1



NO. 55



NO. 6



NO. 3



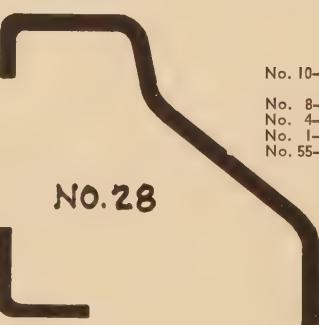
NO. 29



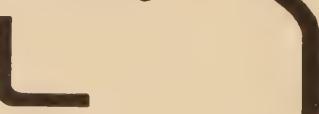
NO. 9



NO. 7



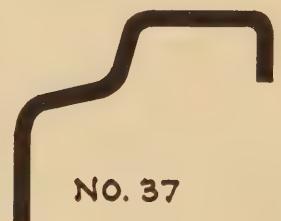
NO. 28



NO. 21

DESCRIPTION

No. 10—Outside frame member for commercial projected and pivoted windows.
 No. 8—Mullion T-Bar for joining two or more units.
 No. 4—Head member of ventilator.
 No. 1—Muntin Bar for windows.
 No. 55—Ventilator frame member for projected ventilators.
 No. 6—Outside frame member for Architectural Projected windows.
 No. 3—Ventilator member.
 No. 9—Weathering member for pivoted ventilators.
 No. 29—Weathering member for project-out ventilators.
 No. 7—Sill weathering member for ventilators.
 No. 28—Head drip for project-out ventilators.
 No. 37—Weathering member for ventilators projected inward.
 No. 21—Glazing angle standard for Underwriters' Labelled windows. Also applicable to Commercial Projected and Pivoted Windows.
 No. 22—Glazing Angle for Architectural Projected Windows. These sections are for Architectural Projected, Commercial Projected and Underwriters' Labelled Windows.



NO. 37



NO. 22

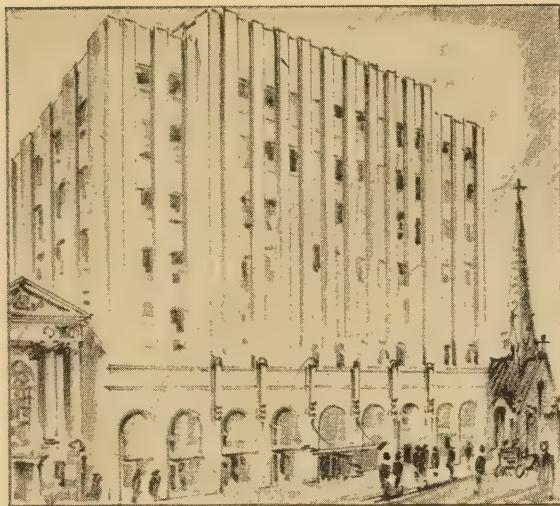
Ceco

**STANDARD WINDOW SECTIONS
FULL SIZE**

PLATE
17

ARCHITECTURAL PROJECTED WINDOWS

Specifications



GENERAL

All windows shall be the Architectural Projected Type as manufactured by the Concrete Engineering Company, Inc., of Chicago, Illinois, or approved equal, as per written approval of the architect, and shall be of sizes and types as shown on architect's drawings.

MATERIAL

All sections shall be especially designed, hot-rolled, new billet steel.

All frame members shall be unequal leg channel section and allow $\frac{3}{4}$ " continuous anchorage.

Muntins shall be special formed T Sections.

Mullions and transom bars shall be Standard CECO, hot-rolled, solid steel T Sections.

CONSTRUCTION

Frames and ventilators shall be mortise and tenon, air-hammer riveted at all corners. After assembling, all four corners of the frame and ventilator shall be solidly welded.

Muntins shall be continuous from head to sill and from jamb to jamb and all muntins shall be interwoven and welded on the inside face of the cross-joint to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon air-hammer riveted.

Ventilators shall have double contact weathering continuous around all four sides.

Each ventilator shall be accurately balanced on two supporting arms of solid spring steel accurately riveted to the frame and ventilator and concealed when the ventilator is closed. Ventilators shall be operated by means of bronze friction shoes, suspended from the hinged point of the ventilator with an adjustable bolt and lock nut backed by a compression spring, assuring constant friction at all times.

Bronze shoes are to slide vertically in a channel guide especially adapted and applied properly to assure easy operation.

All weathering members shall be securely welded to the frame and ventilator members.

Where two or more windows are placed side by side in the same opening, provide CECO Vertical mullions.

Mullions shall extend 2" into sills for anchorage.

Where two or more windows are placed one above another in the same opening, provide CECO Horizontal Mullions. Provide mullion covers for mullions where called for on plans.

Furnish necessary clips, anchors and bolts for installing the windows.

(Note: Include in steel specifications punching to accommodate clips.)

HARDWARE

All hardware shall be bronze throughout.

All ventilators opening out and within reach of the floor, shall be equipped with a bronze cam latch handle of standard CECO design.

All ventilators opening out, and not easily accessible, shall be equipped with bronze cam latch handle and pole ring.

All ventilators opening in shall be equipped with automatic spring latch and keeper.

ERCTION

All windows shall be erected by the Concrete Engineering Company in openings prepared by others.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Apply unattached hardware in accordance with the manufacturer's directions.

(Note: All structural work for the support of steel windows shall be provided by another contractor.)

(Note: Include in masonry specifications, that all mortar, grouting, pointing, etc., shall be done by the masonry contractor after the windows are erected.)

PAINTING

All windows shall be given one coat of gray mineral paint before shipment.

(Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set.)

(Note: Windows erected by the Concrete Engineering Company will be field painted by them if specified.)

GLASS AND GLAZING

(Note: Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.)

All windows shall be glazed from the inside with glazing angles continuous around lights, attached with screws and hexagon nuts.

(Note: Always specify glass thickness.)

Glass shall be bedded and face puttied and shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

SCREENS

(Note: Screens and preparation for screens are not part of the window contract, but windows can be prepared and screens furnished by the Concrete Engineering Company.)

(Note: Flat screens applied to the outside of window for the Projected-In ventilators and inside for the Projected-Out ventilators.)

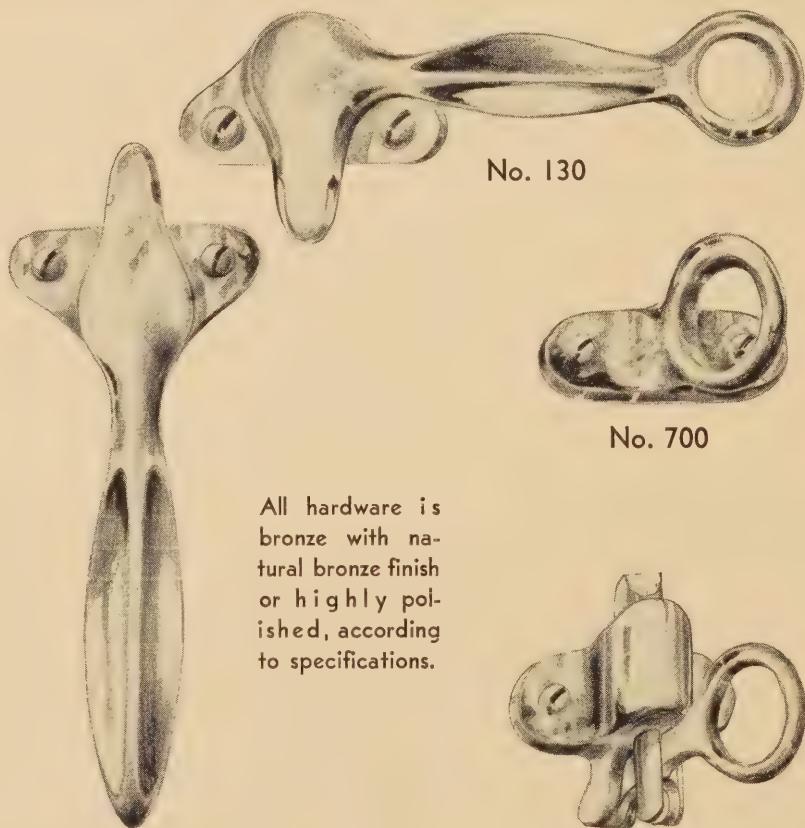
(Note: Underscreen hardware can be furnished for Projected-Out Ventilators at a slight additional cost.)

CONCRETE ENGINEERING COMPANY



NOTES

Cam Handle No. 110 is used at top of ventilator on Projected-In windows. Keeper attached to Frame. Cam Handle No. 130 is used on all Projected-Out ventilators, either hand or pole operated. Strike plate attached to frame. Pole Ring No. 700 is used at head of Projected-Out ventilators. Spring Latch No. 800 is optional with Cam Handle No. 110 for Projected-In ventilators.

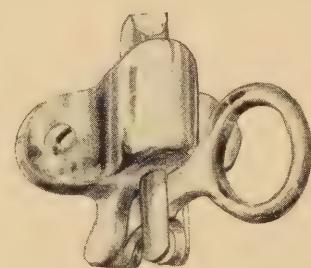


No. 130



No. 700

All hardware is bronze with natural bronze finish or highly polished, according to specifications.



No. 800

Ceco

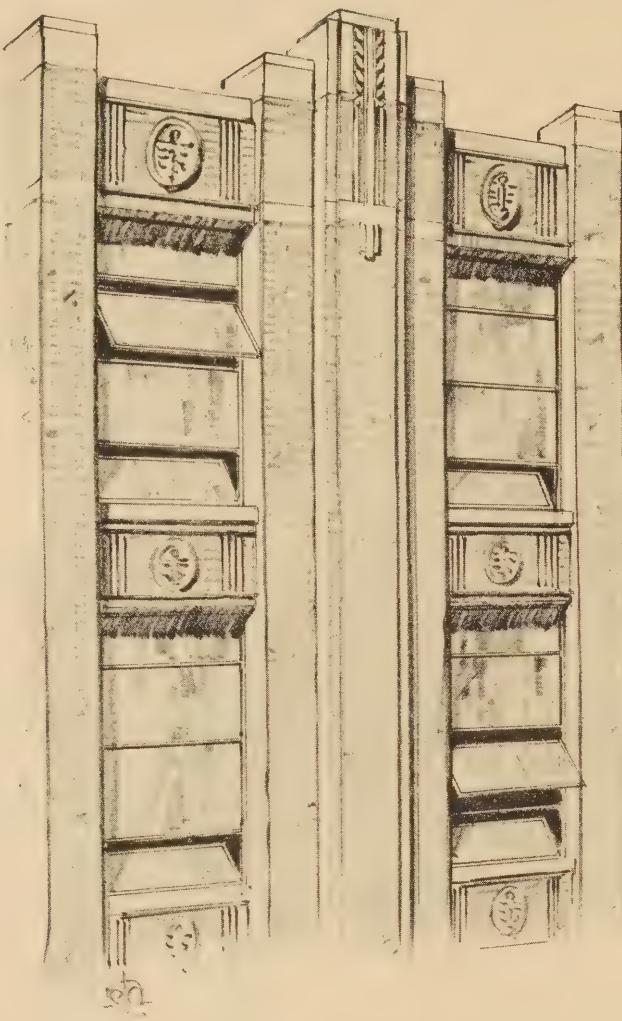
ARCHITECTURAL PROJECTED WINDOWS
HARDWARE

PLATE
18

CONCRETE ENGINEERING COMPANY

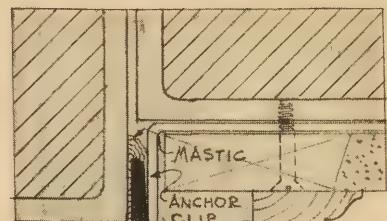
							<img alt="Diagram of a window unit with dimensions 5'-6" wide by 13'-6" high, divided into 2 sections of 60 3	

CONCRETE ENGINEERING COMPANY

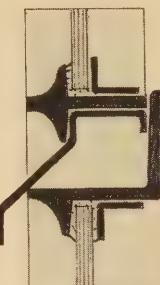


NOTES

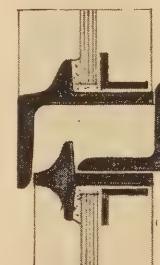
These details, along with those on Plates Nos. 21 and 22, show the various combinations as used in the manufacture of Ceco Architectural Projected Windows. Points of dimensions for sizes of openings are also shown. Caulking between window frame and building construction shall be supplied and applied by others.



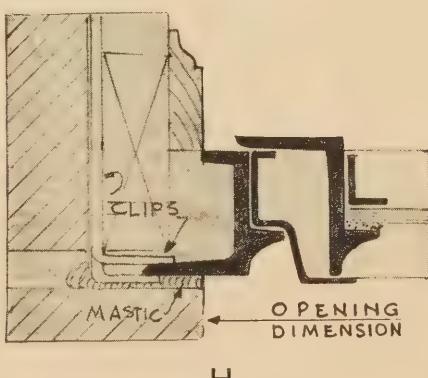
OPENING
DIMENSION



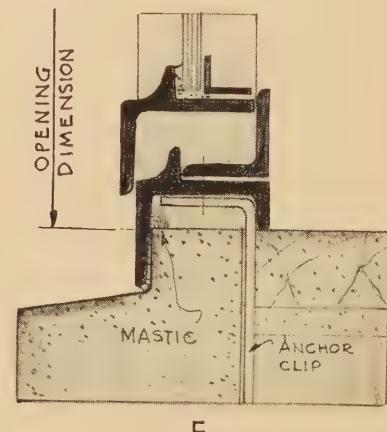
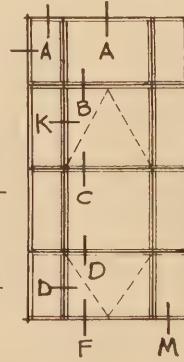
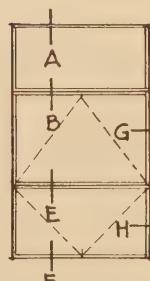
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C



H

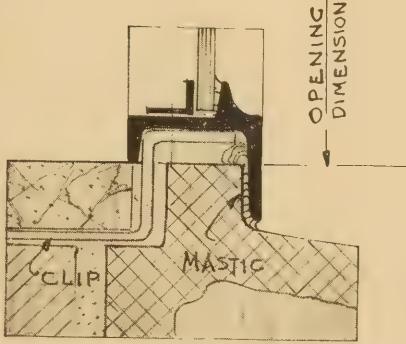
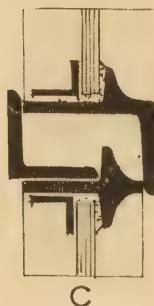
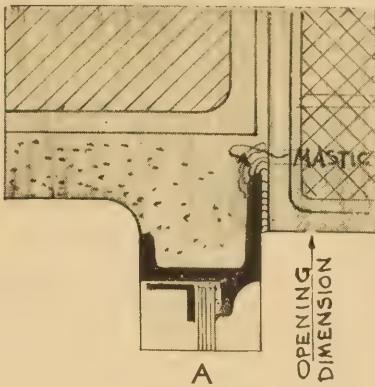


F

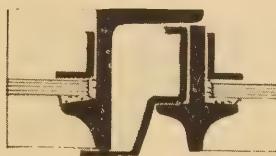
Ceco

ARCHITECTURAL PROJECTED WINDOWS
BRICK INSTALLATION DETAILS

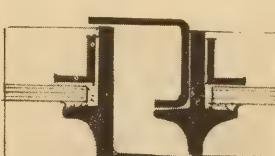
PLATE
20



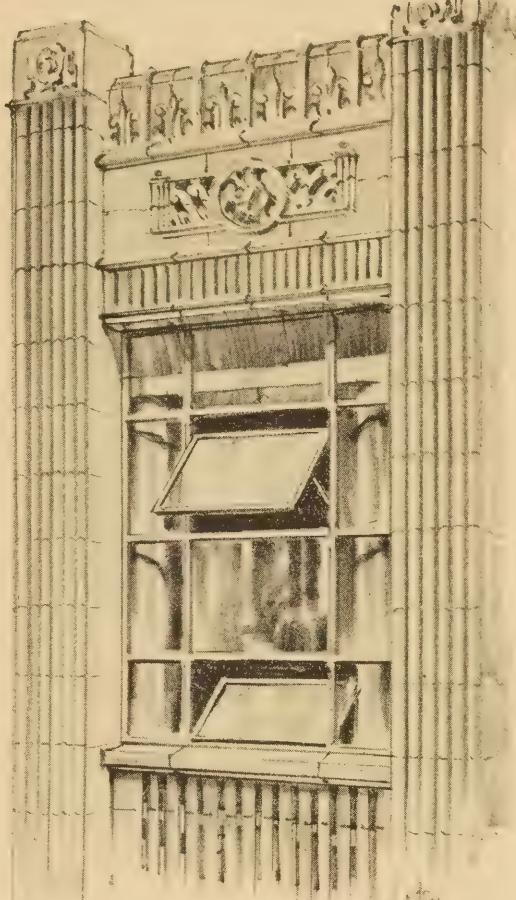
OPENING
DIMENSION



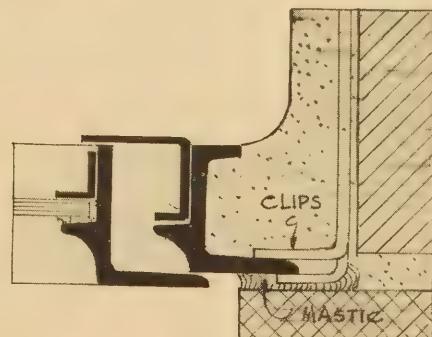
D



K



G

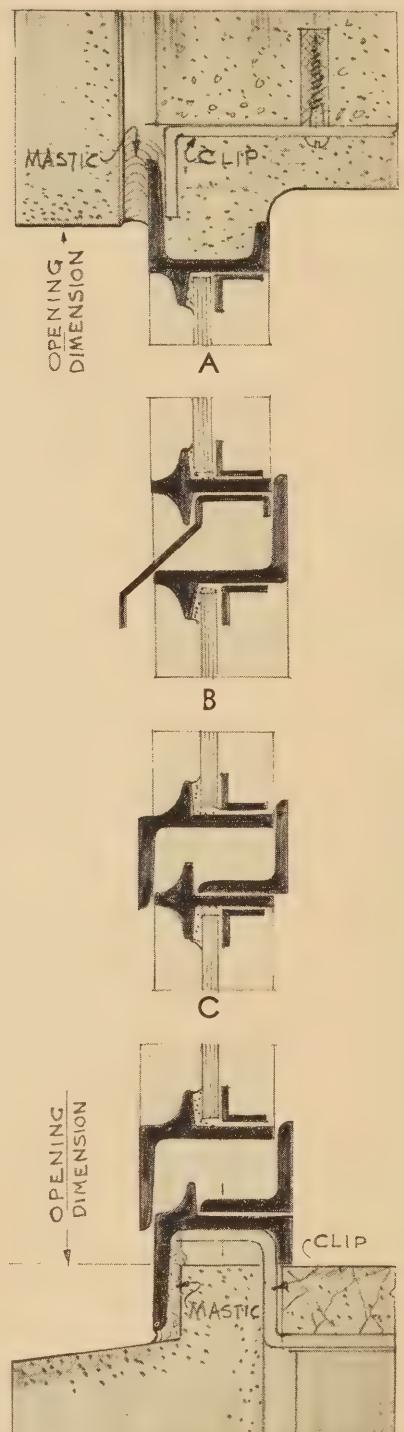


CONCRETE ENGINEERING COMPANY



NOTES

See Plates Nos. 20 and 21 for Section Details. Combination Diagram shown on Plate 20 is the index to details shown here. Caulking between window frame and building construction shall be supplied and applied by others.



Ceco

**ARCHITECTURAL PROJECTED WINDOWS
STONE INSTALLATION DETAILS**

**PLATE
22**

COMMERCIAL PROJECTED WINDOWS

Specifications

GENERAL

All windows shall be the Commercial Projected Type as manufactured by the Concrete Engineering Company, Inc., of Chicago, Illinois, or approved equal, as per written approval of the architect, and shall be of sizes and types as shown on architect's drawings.

MATERIAL

All sections shall be especially designed, hot-rolled, new billet steel.

All frame members shall be special angle section and shall allow $\frac{3}{4}$ " Continuous anchorage.

Muntins shall be especially formed T sections.

Mullions and transom bars shall be standard CECO, hot-rolled, solid steel T Sections.

CONSTRUCTION

Frames and ventilators shall be mortise and tenon, air-hammer riveted at all corners. After assembling, all four corners of the frame and ventilator shall be solidly welded.

Muntins shall be continuous from head to sill and from jamb to jamb and all muntins shall be interwoven and welded on the inside face of the cross-joint to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon, air-hammer riveted.

Ventilators shall have double contact weathering continuous around all four sides.

Each ventilator shall be accurately balanced on two supporting arms of solid spring steel accurately riveted to the frame and ventilator, and concealed when the ventilator is closed. Ventilators shall be operated by means of bronze friction shoes suspended from the hinged point of the ventilator with an adjustable bolt and lock nut backed by a compression spring, assuring constant friction at all times.

Bronze shoes are to slide vertically in a channel guide especially adapted and applied properly to assure easy operation.

All weathering members shall be securely welded to the frame and ventilator members.

Where two or more windows are placed side by side in the same opening, provide CECO Vertical Mullions.

Mullions shall extend two inches into sills for anchorage.

Where two or more windows are placed one above another in the same opening, provide CECO Horizontal Mullions.

Provide mullion covers for mullions where called for on plans.

Furnish necessary clips, anchors and bolts for installing the windows.

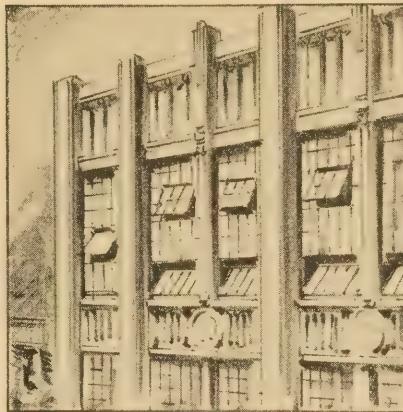
(Note: Include in steel specifications punching to accommodate clips.)

HARDWARE

All hardware shall be malleable iron.

(Note: Bronze hardware may be furnished at a slight additional cost.)

All ventilators opening out and within reach of the floor, shall be equipped with a standard cam latch handle.



All ventilators opening out, and not easily accessible, shall be equipped with standard cam latch handle and pole ring.

All ventilators opening in shall be equipped with automatic spring latch and keeper.

ERCTION

All windows shall be erected by the Concrete Engineering Company in openings prepared by others.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Apply unattached hardware in accordance with the manufacturer's directions.

(Note: Include in masonry specifications that all mortar, grouting, pointing, etc., shall be done by the mason contractor after the windows are erected.)

(Note: All structural work for the support of steel windows shall be provided by another contractor.)

PAINTING

All windows shall be given one coat of gray mineral paint before shipment.

(Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.)

(Note: Windows erected by the Concrete Engineering Company will be field painted by them if specified.)

GLASS AND GLAZING

(Note: Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.)

All windows shall be glazed from the inside, all glass being set in a bed of putty and secured by glazing clips furnished by the window manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

(Note: Specify types of glass, single strength glass is not recommended.)

(Note: Do not paint until putty has thoroughly hardened.)

SCREENS

(Note: Screens and preparation for screens are not part of the window contract, but windows can be prepared and screens furnished by the Concrete Engineering Company.)

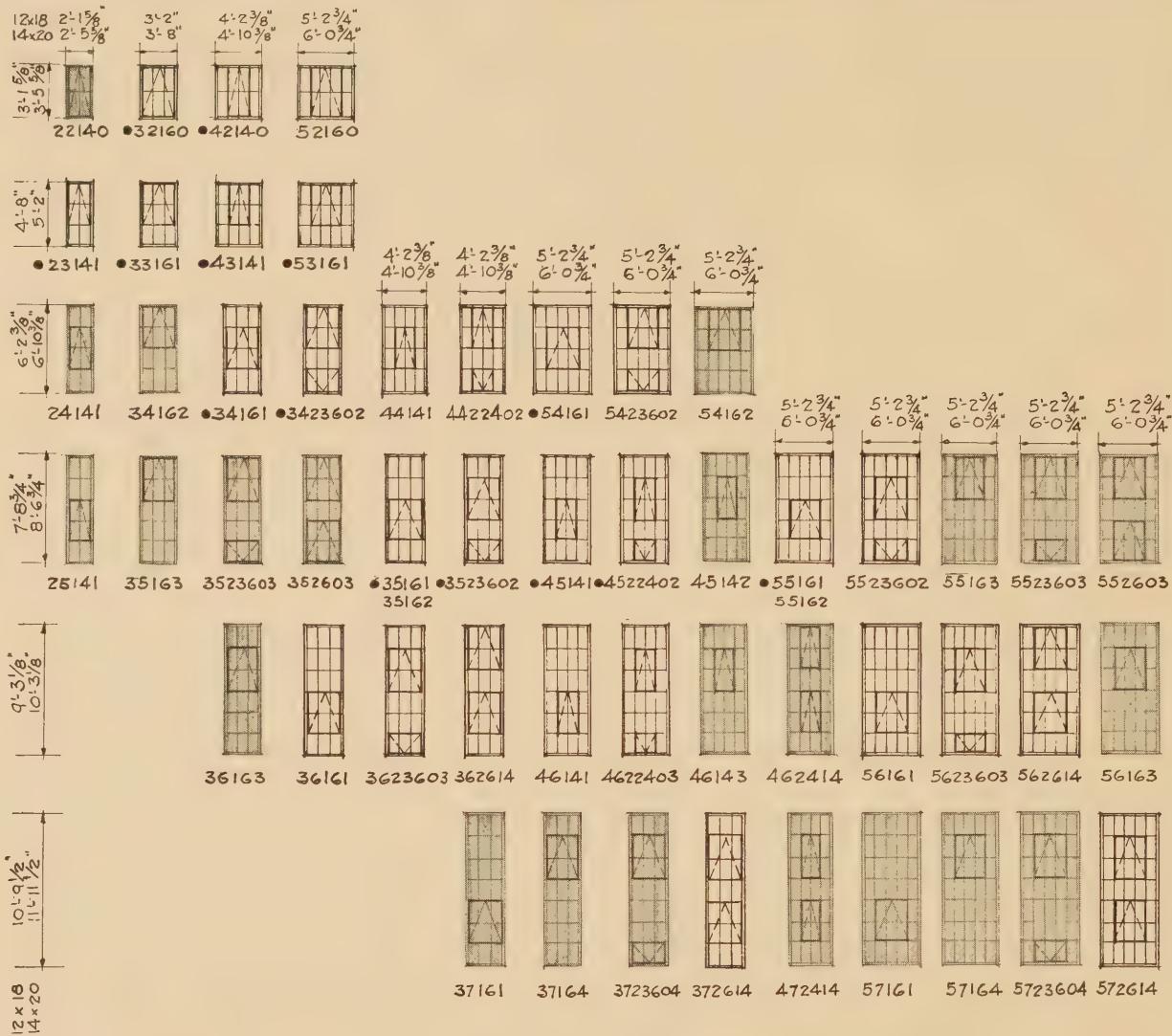
(Note: Flat screens applied to the outside of window for the Projected-In ventilators and inside for the Projected-Out ventilators.)

(Note: Underscreen hardware can be furnished for Projected-Out ventilators at a slight additional cost.)

UNDERWRITERS'

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7'0" in width by 12'0" in height, must be inside angle glazed. The maximum glass size is 350 sq. in.

CONCRETE ENGINEERING COMPANY



NOTES

Unit dimensions shown here are for masonry openings and two or more units may be combined in an opening by using mullions. The width of opening for a multiple unit opening is the equivalent of the sum of each individual unit, plus 2 inches for each mullion added. Ventilators shown as Projected-In or Projected-Out may be reversed without additional cost.

All types shown are punched for mullion bars.

•Warehouse Stock Types.

Shaded Units are listed specials. All other units are standard.

Note: "V" indicates projected-in from top. Inverted "V" indicates projected-out from bottom.

12	11	12	11	12
18	17	17	17	18
12	11	12	11	12
18	17	17	17	18
12	12	12	12	12
18	18	18	18	18
12	11	12	11	12
18	16	16	16	18

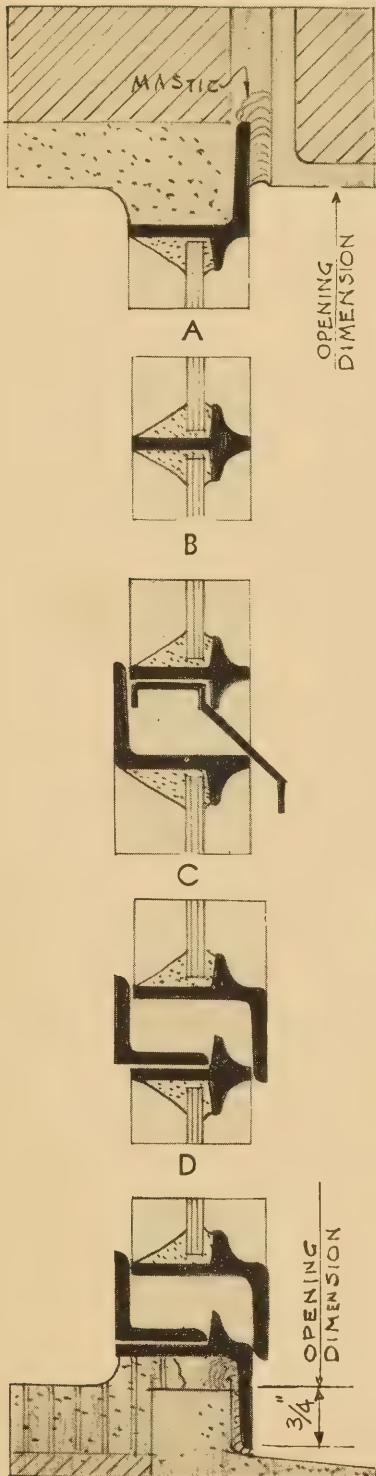


Ceco

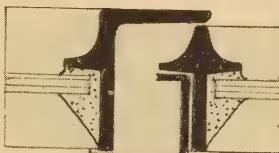
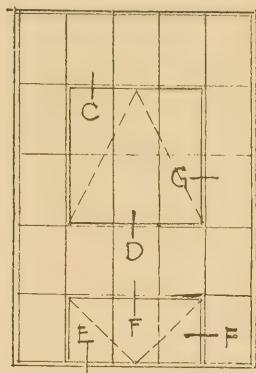
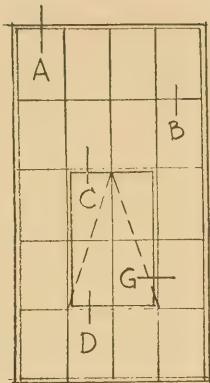
COMMERCIAL PROJECTED WINDOWS
TYPES AND SIZES

PLATE
23

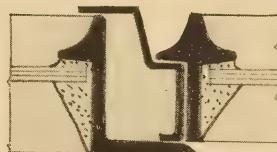
CONCRETE ENGINEERING COMPANY



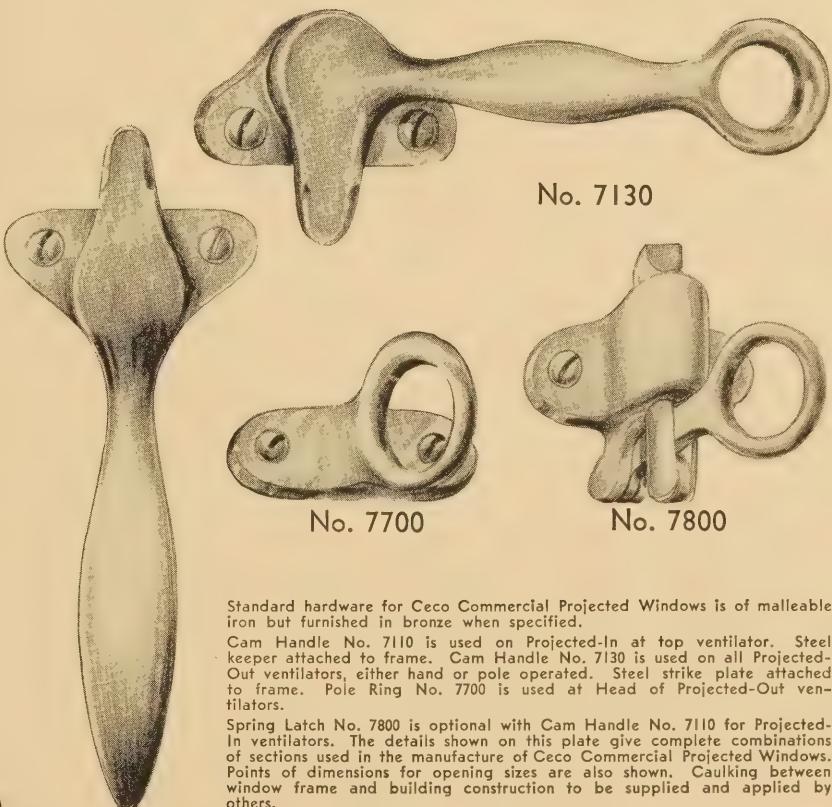
No. 7110



F



G



No. 7130

No. 7700

No. 7800

Standard hardware for Ceco Commercial Projected Windows is of malleable iron but furnished in bronze when specified.

Cam Handle No. 7110 is used on Projected-In at top ventilator. Steel keeper attached to frame. Cam Handle No. 7130 is used on all Projected-Out ventilators, either hand or pole operated. Steel strike plate attached to frame. Pole Ring No. 7700 is used at Head of Projected-Out ventilators.

Spring Latch No. 7800 is optional with Cam Handle No. 7110 for Projected-In ventilators. The details shown on this plate give complete combinations of sections used in the manufacture of Ceco Commercial Projected Windows. Points of dimensions for opening sizes are also shown. Caulking between window frame and building construction to be supplied and applied by others.

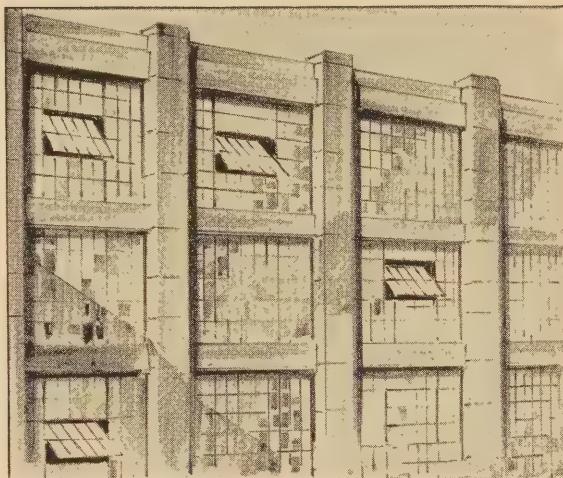
Ceco

COMMERCIAL PROJECTED WINDOWS
INSTALLATION DETAILS & HARDWARE

PLATE
24

PIVOTED WINDOWS

Specifications



GENERAL

All windows shall be the Horizontally Pivoted Type as manufactured by the Concrete Engineering Company, Inc., of Chicago, Illinois, or approved equal, as per written approval of the architect and shall be of sizes and types as shown on architect's drawings.

MATERIAL

All sections shall be especially designed, hot rolled, new billet steel.

All frame members shall be special angle section and shall allow $\frac{3}{4}$ " continuous anchorage.

Muntins shall be especially formed T sections.

Head member of ventilator shall be a solid section, designed for double weathering without the use of additional weathering members.

Mullions and transom bars shall be standard CECO, hot rolled, solid steel T sections.

CONSTRUCTION

Frames and ventilators shall be mortise and tenon, air-hammer riveted at all corners.

Muntins shall be continuous from head to sill and from jamb to jamb and all muntins shall be interwoven and welded on the inside face of the cross-joint to increase their strength at the point of intersection. Joint at frames shall be mortise and tenon, air-hammer riveted.

Ventilators shall have double contact weathering continuous around all four sides.

All ventilators shall be horizontally pivoted and supported by special solid rolled steel external butts, double riveted through the weathering and window members.

All weathering members shall be securely welded to the frame and ventilator members.

Where two or more windows are placed side by side in the same opening, provide CECO Vertical mullions.

Mullions shall extend two inches into sills for anchorage.

Where two or more windows are placed one above another in the same opening, provide CECO Horizontal Mullions.

Furnish necessary clips, anchors and bolts for installing the windows.

(Note: Include in steel specifications punching to accommodate clips.)

HARDWARE

All ventilators shall be equipped with either push-bar, cam latch, or spring latch and chain, as marked on drawings.

MECHANICAL OPERATORS

All runs of ventilators, shown on drawings as "Mechanically Controlled" shall be equipped with an approved type of operator as manufactured by Concrete Engineering Company.

ERCTION

All windows shall be erected by the Concrete Engineering Company in openings prepared by others.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Apply unattached hardware in accordance with the manufacturer's directions.

(Note: Include in masonry specifications that all mortar, grouting, pointing, etc., shall be done by the mason contractor after the windows are erected.)

(Note: All structural work for the support of steel windows shall be provided for by another contractor.)

PAINTING

All windows shall be given one coat of gray mineral paint before shipment.

(Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set.)

(Note: Windows erected by the Concrete Engineering Company will be field painted by them if specified.)

GLASS AND GLAZING

(Note: Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.)

All windows shall be glazed from the inside, all glass being set in a bed of putty and secured by glazing clips furnished by the window manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

(Note: Specify types of glass. Single strength glass is not recommended.)

(Note: Do not paint until putty has thoroughly hardened.)

SCREENS

(Note: Screens and preparation for screens are not part of the window contract, but windows can be prepared and screens furnished by the Concrete Engineering Company.)

(Note: Metal screens may be so arranged that the upper half of the screen is outside of the ventilator and the lower half on the inside.)

UNDERWRITERS

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7'0" in width by 12'0" in height. These windows must be inside angle glazed. The maximum glass size is 350 sq. in.

CONCRETE ENGINEERING COMPANY

COMBINATION OF STANDARD UNITS

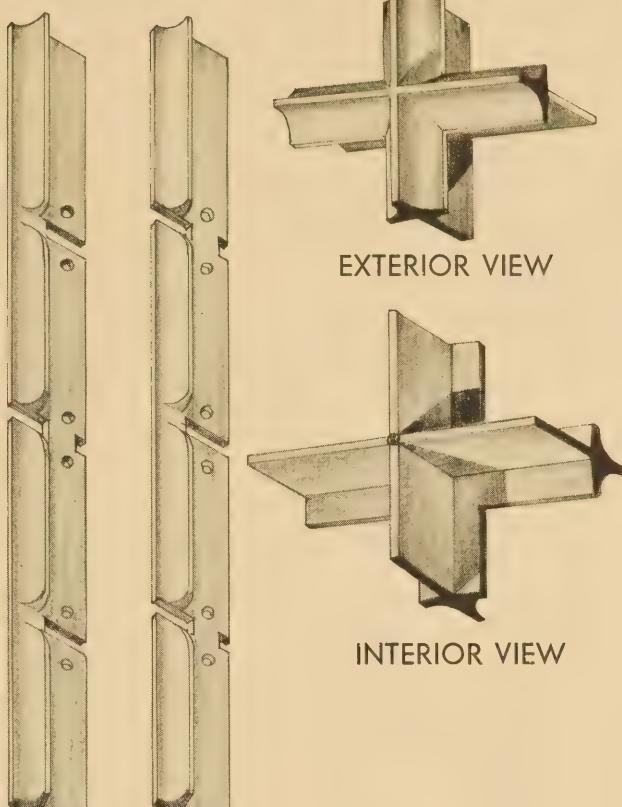
Standard sizes and openings are shown below and by referring to height and width dimensions, sizes close to those needed can be easily ascertained. The number of units necessary to fill the opening is also given.

When two or more units are placed together, two inches have been added to the width dimensions as shown in the table for each mullion used.

12" x 18" Glass		Number of Units	NO. OF LIGHTS PER UNIT Position of each number indicates Position of unit in opening	Number of Lights	Total Number of Mullions	14" x 20" Glass	
Widths of Openings	Total Number of Units					Widths of Openings	Total Number of Units
2' 15/8"	1	2	2	2	None	2' 55/8"	
3' 23/8"	1	3	3	3	3	3' 8"	
4' 23/8"	1	4	4	4	4	4' 103/8"	
5' 23/8"	1	5	5	5	6	5' 03/8"	
6' 31/8"	1	6	6	6	7	6' 31/8"	
6' 6"	2	3, 3	6	1	7'	6"	
8' 63/4"	2	4, 4	8	1	9'	103/4"	
9' 10"	3	3, 3, 3	9	2	11'	4"	
10' 71/2"	2	5, 5	10	1	12'	31/2"	
10' 103/4"	3	3, 4, 3	10	2	12'	63/8"	
11' 103/4"	3	3, 5, 3	11	2	13'	83/4"	
11' 81/4"	3	4, 3, 4	11	2	13'	83/4"	
12' 81/4"	2	6, 6	12	1	14'	81/4"	
12' 111/8"	3	4, 4, 4	12	2	14'	111/8"	
13' 111/8"	3	4, 5, 4	13	2	16'	111/2"	
13' 111/2"	3	5, 3, 5	13	2	16'	111/2"	
14' 111/2"	3	4, 6, 4	14	2	17'	37/8"	
14' 117/8"	3	5, 4, 5	14	2	17'	37/8"	
15' 23/4"	4	3, 4, 4, 3	14	3	17'	63/4"	
16' 01/4"	3	5, 5, 5	15	2	18'	61/4"	
16' 01/4"	3	6, 3, 6	15	2	18'	61/4"	
17' 05/8"	3	5, 6, 5	16	2	19'	85/8"	
17' 05/8"	3	6, 4, 6	16	2	19'	85/8"	
17' 31/2"	4	4, 4, 4, 4	16	3	19'	111/2"	
18' 1"	3	6, 5, 6	17	2	20'	11"	
19' 13/8"	3	6, 6, 6	18	2	22'	13/8"	
19' 41/4"	4	3, 6, 6, 3	18	3	22'	41/4"	
19' 41/4"	4	4, 5, 5, 4	18	3	22'	41/4"	
20' 71/2"	5	5, 3, 3, 3, 5	19	4	23'	91/2"	
21' 5"	4	5, 5, 5, 5	20	3	24'	9"	
21' 5"	4	4, 6, 6, 4	20	3	24'	9"	
21' 71/2"	5	4, 4, 4, 4, 4	20	4	24'	117/8"	
22' 81/4"	5	4, 4, 4, 4, 4	21	4	26'	21/4"	
22' 53/4"	4	5, 5, 5, 3	21	4	26'	21/4"	
23' 81/8"	5	5, 4, 4, 4, 5	22	4	27'	45/8"	
23' 111/2"	6	3, 4, 4, 4, 4, 3	22	5	27'	71/2"	
24' 8"	5	4, 5, 5, 5, 4	23	4	28'	7"	
25' 61/2"	4	6, 6, 6, 6	24	3	29'	61/2"	
25' 91/2"	5	3, 6, 6, 6, 3	24	4	29'	93/8"	
26' 01/4"	6	4, 4, 4, 4, 4, 4	24	5	30'	01/4"	
26' 103/4"	5	5, 5, 5, 5, 5	25	4	30'	113/8"	
27' 103/4"	5	5, 5, 5, 5, 5	26	4	32'	21/2"	
28' 11/8"	6	5, 4, 4, 4, 4, 5	26	5	32'	51/8"	
28' 11/4"	6	3, 5, 5, 5, 5, 3	26	5	32'	5"	
28' 101/2"	5	6, 5, 5, 5, 6	27	4	33'	41/2"	
29' 107/8"	5	5, 6, 6, 6, 5	28	4	34'	67/8"	
30' 13/4"	6	4, 5, 5, 5, 5, 4	28	5	34'	93/8"	
30' 111/4"	5	6, 6, 6, 6, 6	29	4	35'	91/4"	
31' 115/8"	5	6, 6, 6, 6, 6	30	4	36'	115/8"	
32' 21/2"	6	5, 5, 5, 5, 5, 5	30	5	37'	21/2"	
33' 51/4"	7	4, 4, 5, 5, 5, 4	31	6	38'	73/4"	
34' 31/4"	6	4, 6, 6, 6, 6, 6	32	5	39'	71/4"	
35' 61/2"	7	4, 5, 5, 5, 5, 5, 4	33	6	41'	01/2"	
36' 41/2"	6	5, 6, 6, 6, 6, 5	34	5	42'	0"	
37' 71/4"	7	5, 5, 5, 5, 5, 5, 5	35	6	43'	51/4"	
38' 43/4"	6	6, 6, 6, 6, 6, 6	36	5	44'	43/4"	
39' 8"	7	5, 5, 5, 5, 5, 5, 6	37	6	45'	10"	
40' 83/4"	7	4, 6, 6, 6, 6, 4	38	6	47'	03/4"	
41' 83/4"	7	6, 6, 6, 6, 6, 6	39	6	48'	23/4"	
42' 91/8"	7	6, 6, 6, 6, 6, 6	40	6	49'	51/8"	
43' 0"	8	5, 5, 5, 5, 5, 5, 5	40	7	49'	8"	
43' 91/2"	7	6, 6, 6, 6, 6, 6	41	6	50'	71/2"	
44' 91/8"	7	6, 6, 6, 6, 6, 6	42	6	51'	97/8"	
45' 03/4"	8	6, 5, 5, 5, 5, 5, 6	42	7	52'	03/4"	

HEIGHTS OF OPENINGS

12" x 18" Glass		14" x 20" Glass	
Lights High	Height of Openings	Lights High	Height of Openings
1	1' 71/8"	1	1' 91/8"
2	3' 15/8"	2	3' 55/8"
3	4'	3	5'
4	6' 23/8"	4	6' 103/8"
5	7' 83/8"	5	8' 63/8"
6	9' 31/8"	6	10' 31/8"
7	10' 91/8"	7	11' 111/8"



THE STRONG, NEAT JOINT

The finished appearance of the CECO muntin cross joint, with all bars running uniformly and no projections to mar the straight line effect, is shown by the drawings of the interior and exterior views of the completed muntin joint.

The interior view of the joint shows where the muntin bars are welded as illustrated above.

INTERWOVEN MUNTINS—AN EXCLUSIVE FEATURE

CECO Windows are noted for their strength and rigidity. This feature is worth considering, for strength is necessary to withstand shipment, to retain their shape during erection and withstand the heavy wind pressure to which steel windows are often subjected.

HOW EXTRA STRENGTH AND RIGIDITY ARE SECURED

The drawings on this page show how the bars are cut. Note that the cuts alternate, first in the web of the muntin and then in the face. The cut in the horizontal bar is an opposite cut to the one in the vertical bar. This plan is carried out throughout the bars.

The method of joining the bars is to force the muntins together, and the bars are woven through to form a basket weave, one bar pressing against the other.

EVERY MUNTIN JOINT IS WELDED

After the window has been assembled, each cross muntin joint is welded. This process delivers practically a one-piece window because each bar is rigidly tied to the other.

Muntin bars are riveted to frame by air riveting.

All bars are cut and punched in one operation on large multiple punch presses. Each bar is identical as to location of notches in the bars, so that each window is always true to size and shape.

Each unit is carefully inspected by placing the window in a specially designed frame. Ventilator is fitted and inspected to insure a weather-tight yet easily operated ventilator.

Ceco

PIVOTED WINDOWS
MUNTIN CONSTRUCTION AND UNIT SCHEDULE

PLATE
25

CONCRETE ENGINEERING COMPANY

12	12	12	12	12
18	18	18	18	18
12	11	12	11	12
18	17 $\frac{1}{4}$	17 $\frac{1}{4}$	17 $\frac{1}{4}$	18
12	11	12	11	12
18	17 $\frac{1}{4}$	17 $\frac{1}{4}$	17 $\frac{1}{4}$	18
12	12	12	12	12
18	18	18	18	18

12x18 Glass

GLASS FOR VENTILATORS

14x20 Glass

The proper glass sizes for ventilators are shown to the left and right. Ventilators call for smaller lights which should be cut to dimensions given in these diagrams.

• Warehouse Stock Types.

Other units are Standard Types.

NOTE: For other types see Near Standards Plate No. 27.

14	14	14	14	14
20	20	20	20	20
14	13	14	13	14
20	19 $\frac{1}{4}$	19 $\frac{1}{4}$	19 $\frac{1}{4}$	20
14	13	14	13	14
20	19 $\frac{1}{4}$	19 $\frac{1}{4}$	19 $\frac{1}{4}$	20
14	14	14	14	14
20	20	20	20	20

WIDTH

2x18

4x20

3-1 $\frac{5}{8}$ "

3-5 $\frac{1}{8}$ "

3-1 $\frac{5}{8}$ "

3-5 $\frac{1}{8}$ "

3'-2"

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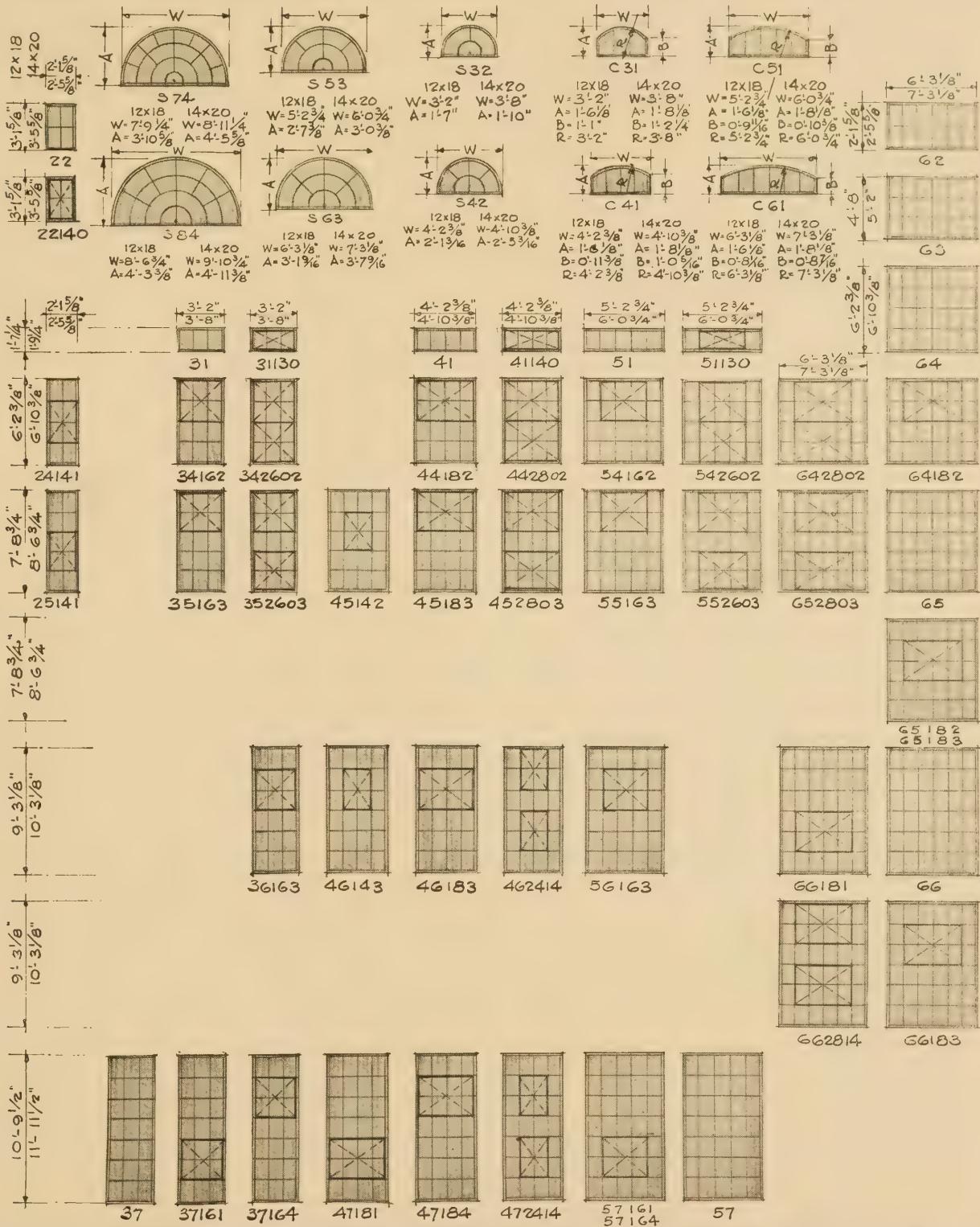
3'-2"

3'-8"

3'-2"

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CONCRETE ENGINEERING COMPANY

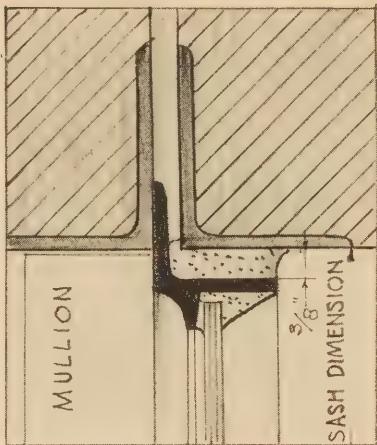


Coco

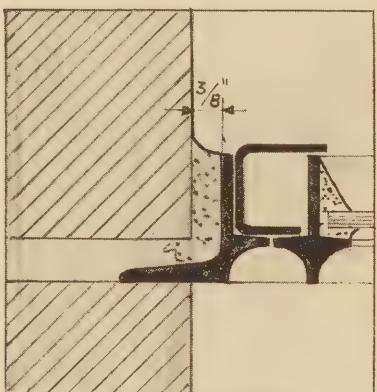
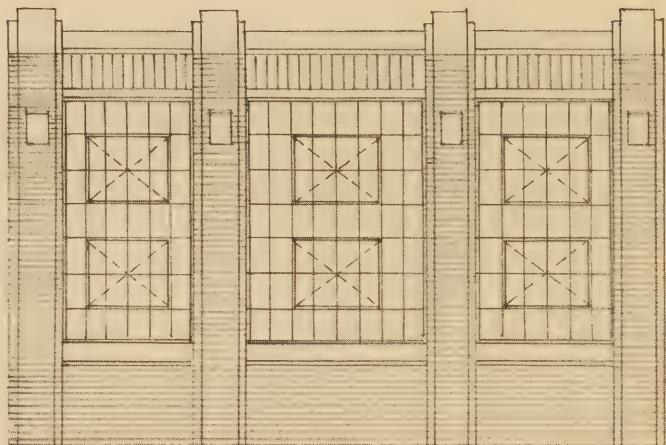
PIVOTED WINDOWS NEAR STANDARD TYPES AND SIZES

PLATE
27

CONCRETE ENGINEERING COMPANY



HEAD



JAMB

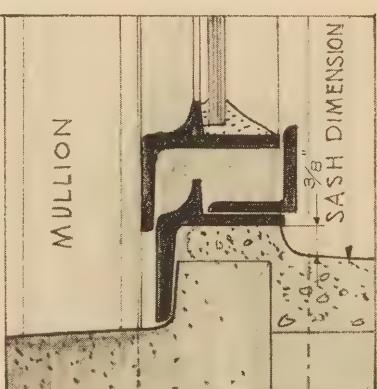


NOTES

These details show typical brick installations.

For openings involving the use of I-Beam, Plate and Angle lintels, See Plate No. 30 for method of securing sash. Sash dimensions shown on Plates No. 26 and 27 are the same as for clear masonry openings.

When masonry openings for single units are prepared prior to the setting of the windows, it is recommended that the inside courses be offset 1" from outside jamb line. This space of 1" must be grouted fully and all sills must be set after windows are erected and aligned.

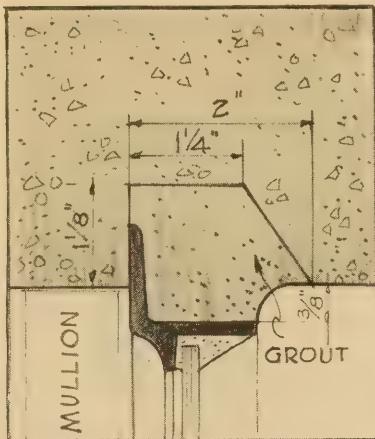


SILL

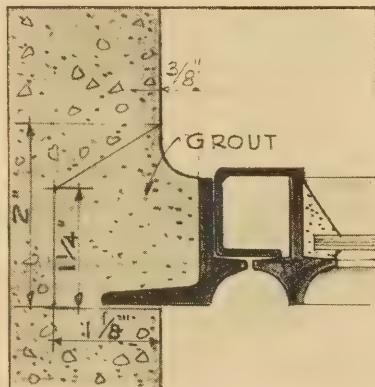
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PIVOTED WINDOWS
BRICK INSTALLATION DETAILS

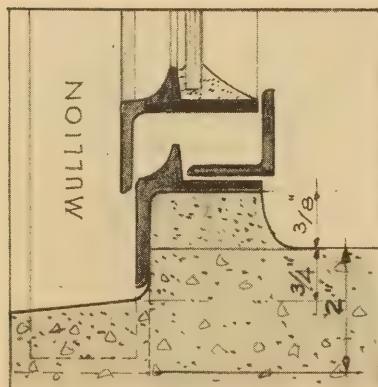
PLATE
28



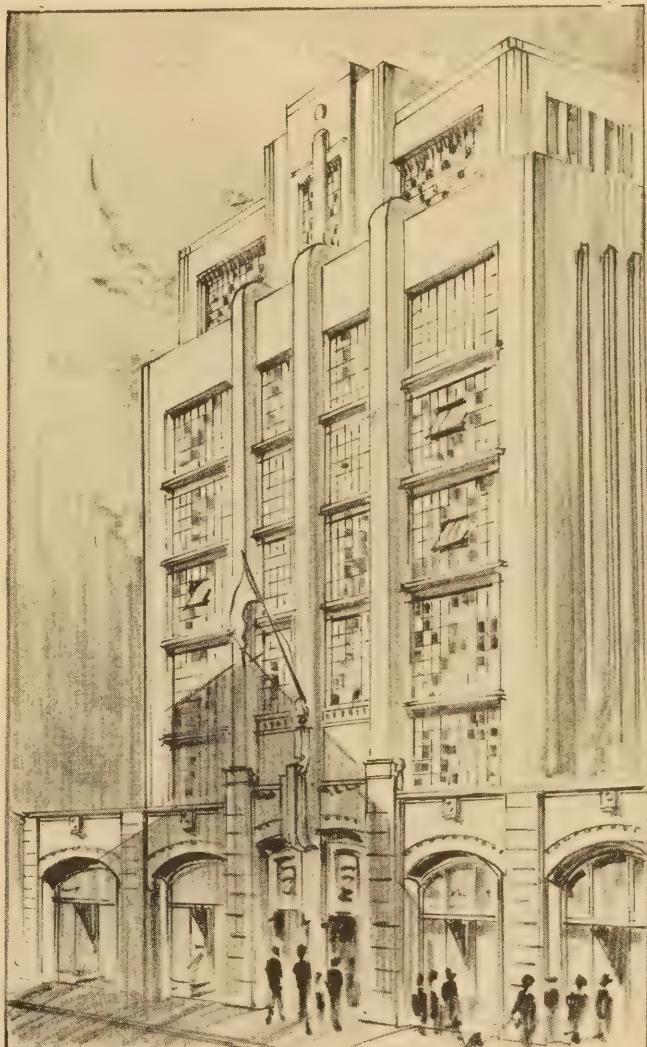
HEAD



JAMB



SILL

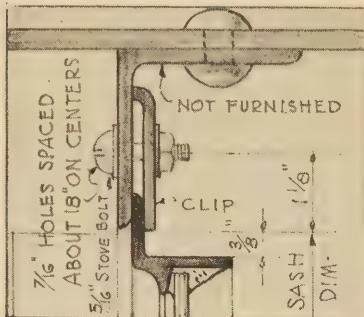


NOTES

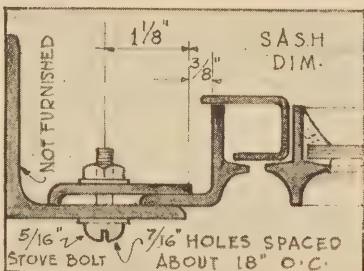
These details illustrate a typical concrete installation. Walls are poured with strips nailed to the forms so that when forms are removed space is left in the wall proper to receive the sash. After grouting, as shown in details at left, sash is permanently anchored to the wall construction, the sill usually being poured after setting the sash. Plate No. 32 shows details of other combinations.

Please refer to Plates Nos. 26 and 27 for dimensions of sash for clear masonry openings.

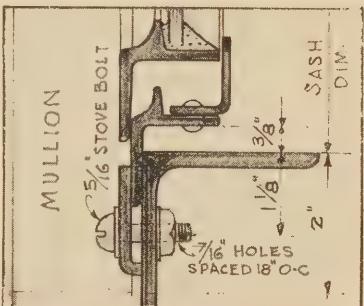
CONCRETE ENGINEERING COMPANY



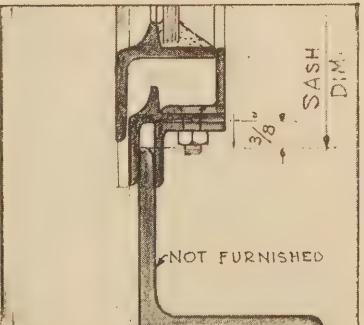
HEAD



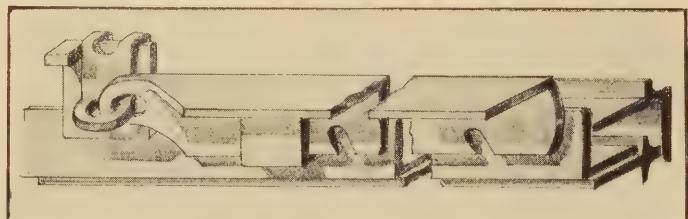
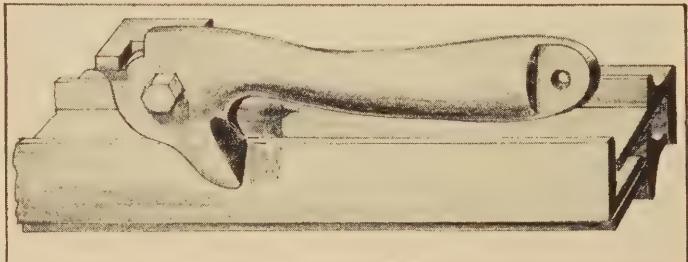
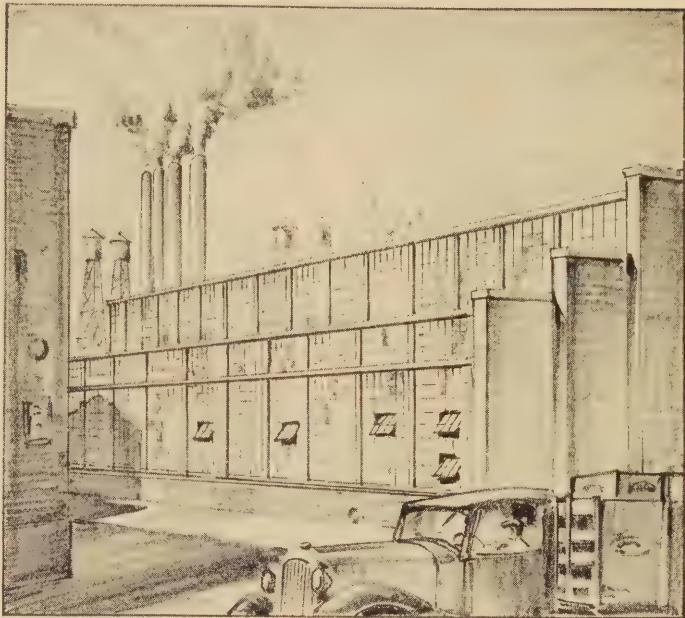
JAMB



SILL



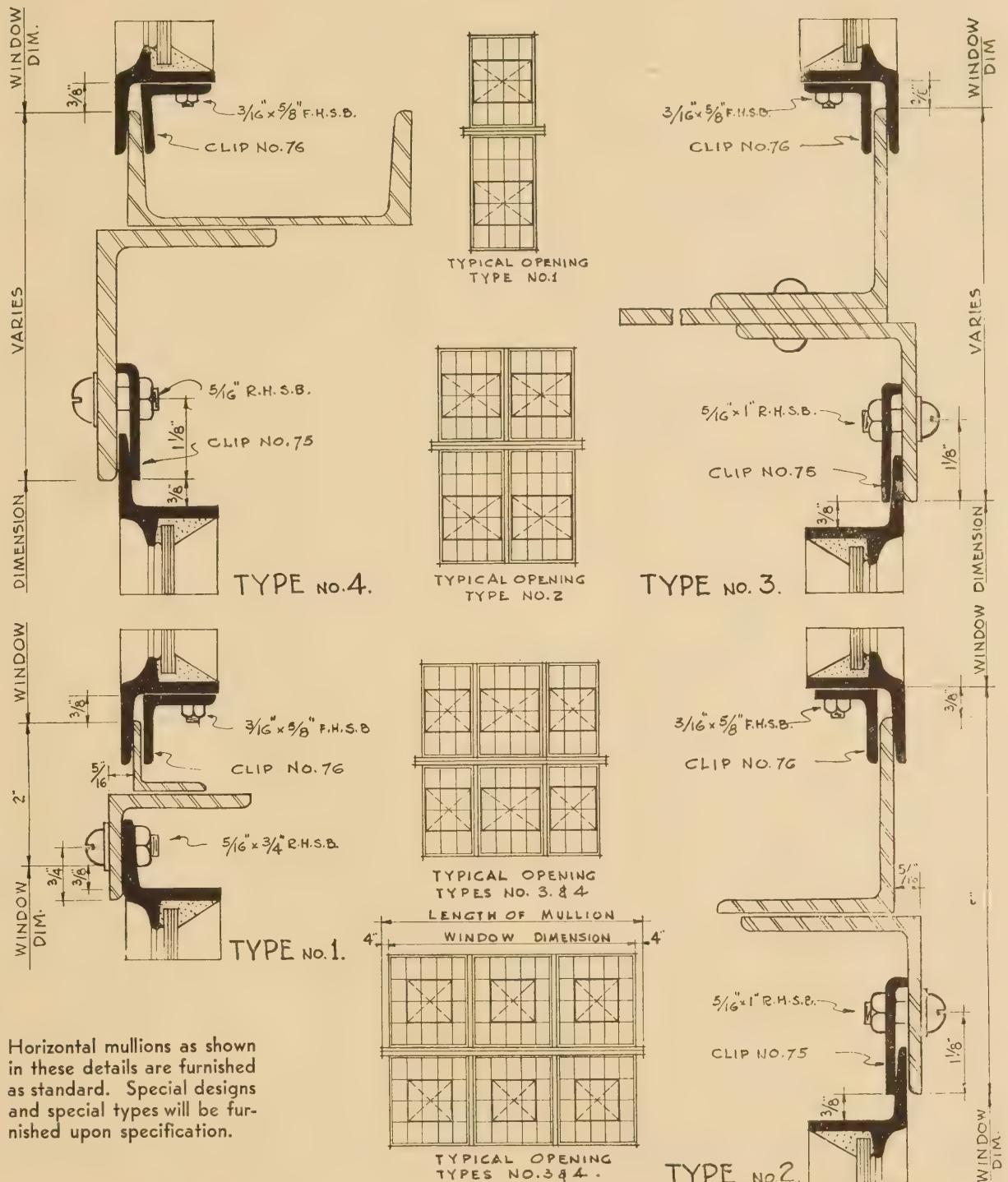
SILL



NOTE

Push Bar Operator or Cam Latch Handle Hardware is optional.

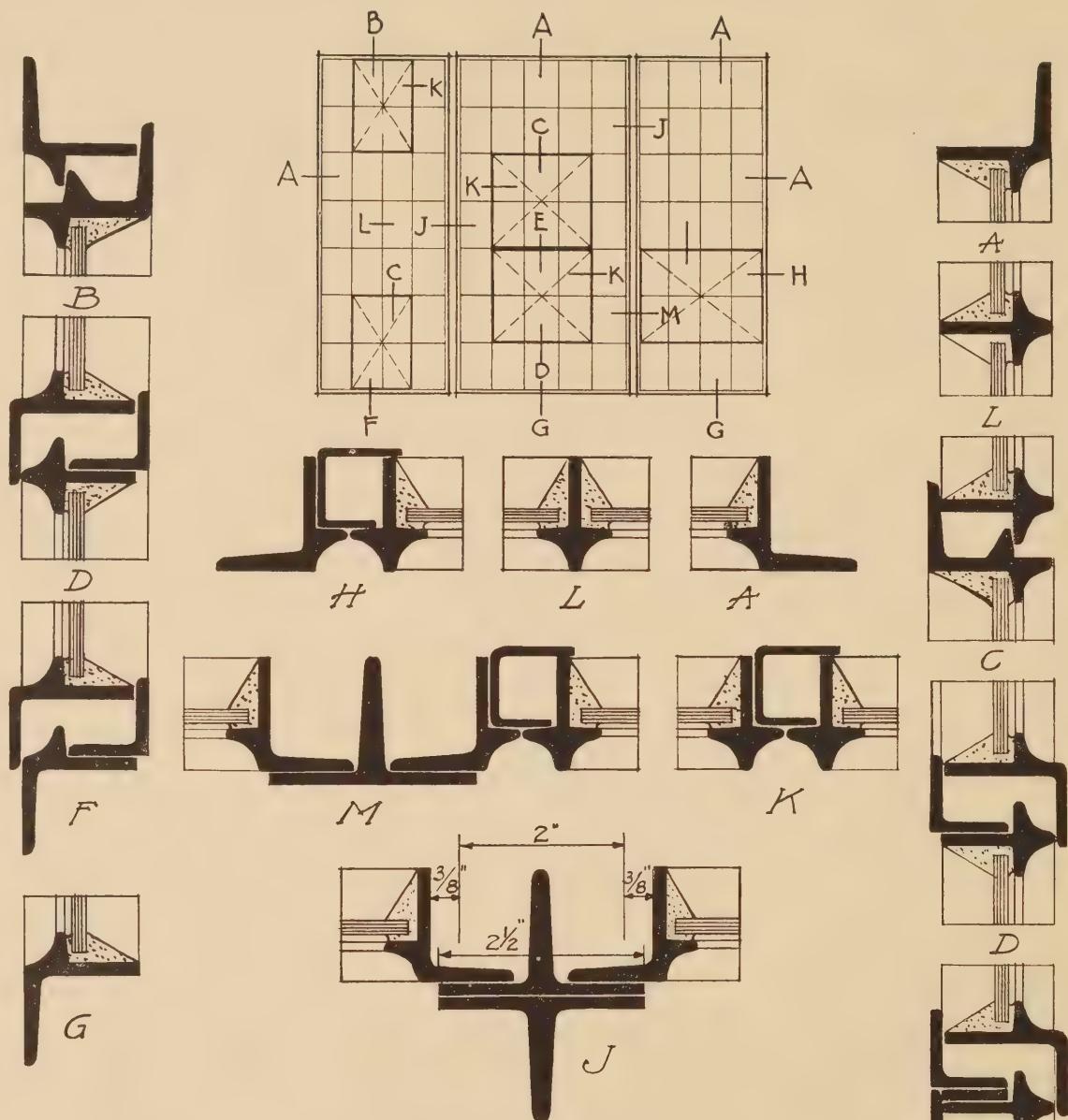
CONCRETE ENGINEERING COMPANY



Ceco

PIVOTED WINDOWS
HORIZONTAL MULLION DETAILS

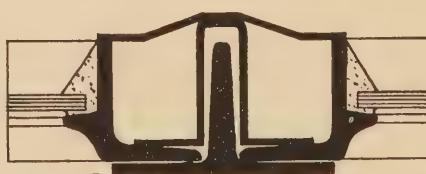
PLATE
31



NOTES

Sections on this plate show possible combinations. Diagram at top incorporates all details obtainable. For details of horizontal mullions for large units, see Plate No. 31; for types and sizes, see Plates Nos. 26 and 27.

See unit schedule Plate No. 25 for standard widths and heights. Where design requires higher openings see Horizontal mullions Plate No. 31.



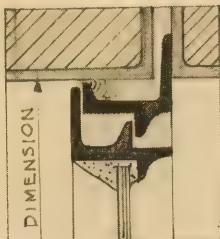
J MULLION & COVER



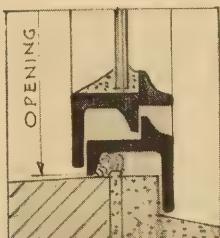
JAMB PLATE

CONCRETE ENGINEERING COMPANY

CECO BASEMENT WINDOWS



HEAD



SILL

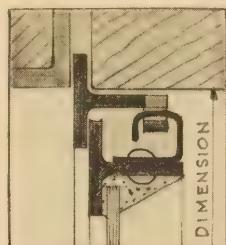
The bars used in the construction of this window are the heaviest found in any steel basement window. (The reduced drawing at the left shows detail.) Ventilators have double contact at all points with effective drip at sill. This double contact is rolled within the bars, guaranteeing a satisfactorily weathered window.

Brass hinge pins are used to eliminate any danger of corrosion at points of bearing so that windows will always open and close easily without binding.

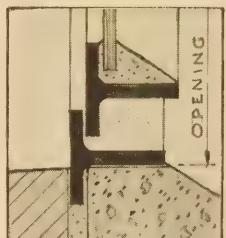
The corners of the frame are air-riveted, then welded—giving practically a solid one-piece construction.

CECO BASEMENT WINDOWS are furnished complete with hinges, locking device and glazing clips. No glass is included.

CECO TEE BAR BASEMENT WINDOWS



HEAD



SILL

Ceco also furnishes a less expensive basement window to meet the requirements where circumstances demand a combination of excellent service and rigid economy. Ceco Tee Bar Type windows are manufactured from solid steel sections. The frame bar is one piece, with corners mitred, which makes a very rigid frame. The ventilators are hinged at the frame as detailed at the left. Effective weathering is secured by the use of flat sections and formed drip at sill of sash. Ceco Tee Bar Basement windows are furnished complete with hinges, locking device and glazing clips. No glass is included.

Sizes	Masonry Opening in Size		
	Glass Size	Width	Height
3 Lights	2-10 1/8" x 13 3/8"	2' 9 1/4" x 1' 2 5/8"	
2 Lights	14" x 20"	2' 6 7/8" x 1' 10 5/8"	
3 Lights	10" x 20"	2' 9 1/4" x 1' 10 5/8"	
3 Lights	12" x 18"	3' 3 1/4" x 1' 8 5/8"	

Sizes	Masonry Opening in Size		
	Glass Size	Width	Height
3 Lights	10" x 12"	2' 8 5/8" x 1' 2"	
2 Lights	14" x 20"	2' 6 1/4" x 1' 10"	
3 Lights	10" x 20"	2' 8 5/8" x 1' 10"	
3 Lights	12" x 18"	3' 2 5/8" x 1' 8"	



BASEMENT WINDOW SUGGESTION

Ceco

BASEMENT WINDOWS
DETAILS & DESCRIPTION

PLATE
33

INDUSTRIAL STEEL DOORS

Specifications

GENERAL

All doors shall be the Industrial type as manufactured by the Concrete Engineering Company, Inc., of Chicago, Illinois, or approved equal as per written approval of the architect, and shall be of sizes and types as shown on architect's drawings.

MATERIAL

The stiles and rails shall be 14 gauge sheet steel to be formed and welded into $1\frac{3}{4}$ " by $4\frac{1}{2}$ " tubes.

Muntins and astragals shall be solid rolled steel sections.

Lower panels to be 14 gauge sheet steel.

Sash panels shall be an integral part of the door leaf, securely welded to the door rail.

CONSTRUCTION

Door corners shall be mitred and assembled over heavy reinforcement which shall extend at least $9\frac{1}{2}$ " in two directions from the corner. Hinge side of all doors shall have heavy continuous reinforcement and provide a base for attachment of the hinges and clevises. Mitre joints shall be face welded around the entire mitre and ground smooth.

Steel panels shall be spot welded to stiles and rails.

The upper portion of the door shall be fitted with a sash panel, all members of which shall be welded in place. The glass shall be held in place with putty and glazing angles.

All double doors shall have astragals, rigidly attached to the left-hand leaf.

Doors shall be reinforced where required to eliminate any racking or sagging.

HARDWARE

Swing Doors—Supply Half Surface, Loose Pin, Brass Plated Steel Hinges.

(Note: Two Hinges for each leaf are supplied for all doors up to 8'0" high. For Doors higher than 8'0", three hinges are supplied.)

Steel Hasps and Staples shall be supplied as standard on all Single and Double-Swing Doors.

(Note: Mortise cylinder locks, master-keyed if desired, may be had at extra cost.)

One Steel Chain Bolt and one Foot Bolt shall be supplied on the inactive leaf of each double swing door.

Sliding doors—Pressed steel clevises shall be supplied for attachment at upper reinforced corners to accommodate trolley hangers.

Supply Steel Safety Hasp for attachment to each active leaf with staple for inactive leaf or door frame.

(Note: We do not supply padlocks.)

Supply two Steel Flush Pulls for attachment one on either side of each sliding door leaf.

Supply standard deep channel tracks, balanced and supported on 2'0" centers by U-shaped track brackets of heavy gauge steel. Supply heavy duty four wheel roller bearing trolleys with adjustable trolley hangers for attachment to clevises.

Guides—Shall be solid rolled steel angles with flaring edges. Center stops on double sliding doors shall be malleable iron castings.

DOOR FRAMES

Door frames shall be 14 gauge steel formed into specially designed $1\frac{1}{2}$ " x 4" channels with self-contained rebate.

All door frames shall extend 2" below the finished floor line for anchorage.

All door frames shall be anchored to structural steel or shall be equipped with corrugated steel anchors placed approximately 24" apart and extending into the masonry.

ERECTION

(Note: The Concrete Engineering Company, Inc., will erect doors and frames if called for in specifications.)

PAINTING

The manufacturer shall give all doors and frames one coat of gray mineral paint before shipment.

(Note: Include in the Painting Specifications that all doors and frames should be given one additional coat after erection.)

(Note: Doors erected by the Concrete Engineering Company will be field painted by them if specified.)

(Note: Caulking shall be furnished and applied under caulking specifications and not as part of door specifications.)

GLASS AND GLAZING

(Note: Glass and glazing shall be furnished under glass and glazing specifications and not as part of door specifications.)

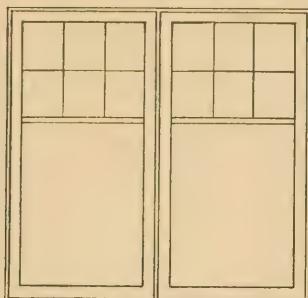
Glass shall be $\frac{1}{4}$ " rough wire, $\frac{1}{4}$ " factory ribbed, or $\frac{1}{8}$ " factory ribbed.

(Note: $\frac{1}{4}$ " glass is recommended. Single or double strength glass should not be used. Glass is not furnished by Concrete Engineering Company.

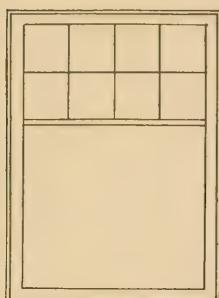
Putty shall be a high grade of steel window putty.

All glass shall be set in a bed of putty and held in place by steel glazing angles mitred at the corners.

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DOUBLE SWING

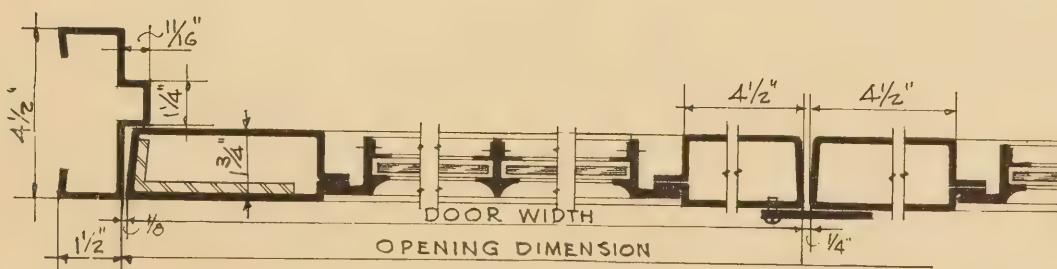
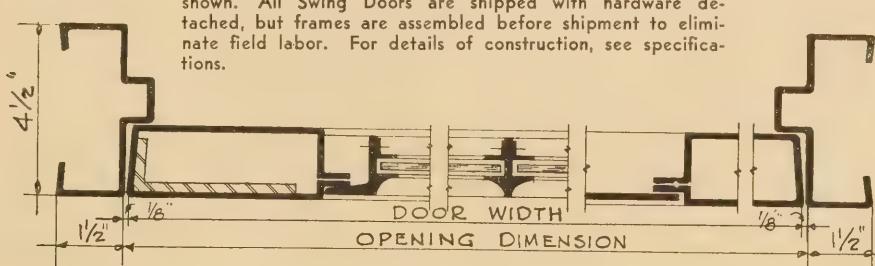


SINGLE SWING



Door	Size of Door		Size of Opening		Glass Size
	Width	Height	Width	Height	
SINGLE SWING					
2670	2' 5 3/4"	6' 11 1/4"	2' 6"	7' 0"	8 3/4" x 16"
3070	2' 11 3/4"	6' 11 1/4"	3' 0"	7' 0"	11 3/4" x 16"
3676	3' 5 3/4"	7' 5 1/4"	3' 6"	7' 6"	14 3/4" x 19"
4080	3' 11 3/4"	7' 11 1/4"	4' 0"	8' 0"	11 3/4" x 22"
50100	4' 11 3/4"	9' 11 1/4"	5' 0"	10' 0"	15 3/4" x 22"
DOUBLE SWING					
5070	2-2' 5 3/4"	6' 11 1/4"	5' 0"	7' 0"	8 3/4" x 16"
6070	2-2' 11 3/4"	6' 11 1/4"	6' 0"	7' 0"	11 3/4" x 16"
7076	2-3' 5 3/4"	7' 5 1/4"	7' 0"	7' 6"	14 3/4" x 19"
8080	2-3' 11 3/4"	7' 11 1/4"	8' 0"	8' 0"	11 3/4" x 22"
100100	2-4' 11 3/4"	9' 11 1/4"	10' 0"	10' 0"	15 3/4" x 22"

NOTE: Single Swing or Double Swing Doors are available as shown. All Swing Doors are shipped with hardware detached, but frames are assembled before shipment to eliminate field labor. For details of construction, see specifications.

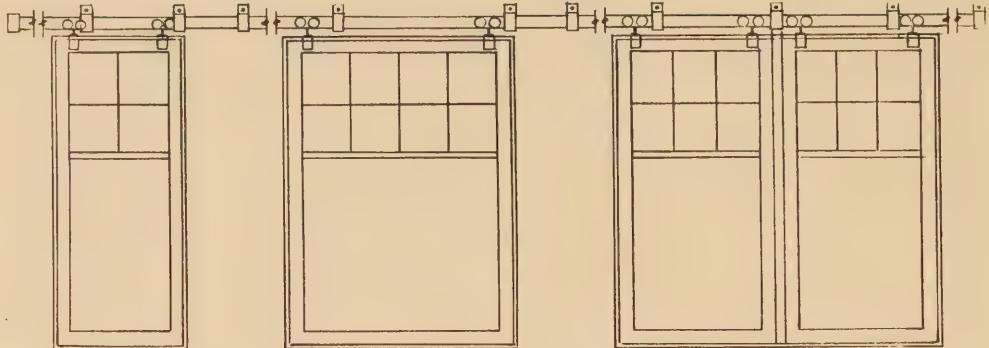
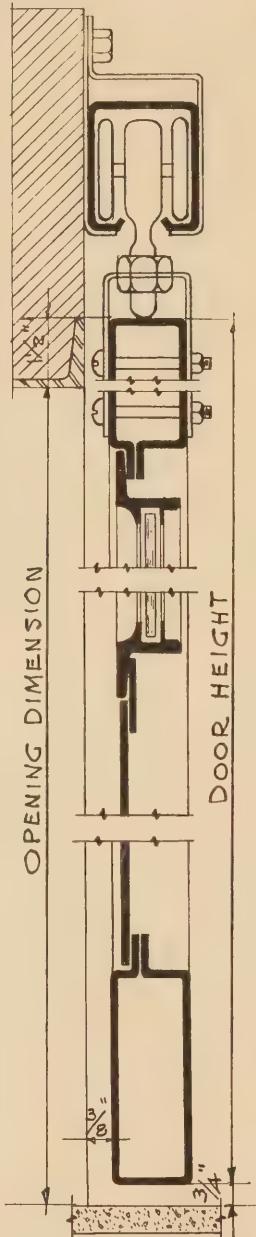


Ceco

INDUSTRIAL STEEL DOORS
SWING TYPE

PLATE
34

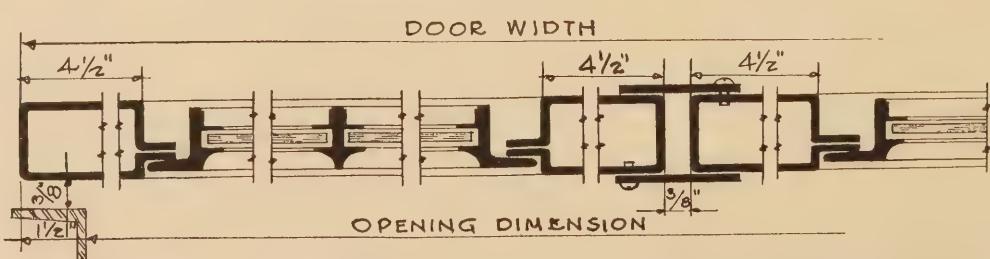
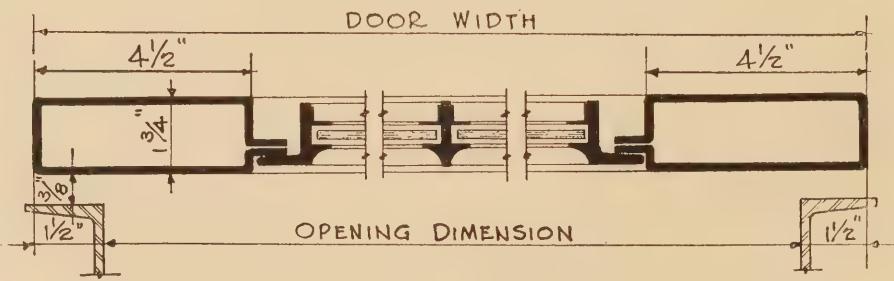
CONCRETE ENGINEERING COMPANY



STOCK SIZES

Door	Size of Door		Size of Opening		Glass Size
	Width	Height	Width	Height	
SINGLE SLIDE					
2670	2' 5 3/4"	6' 11 1/4"	2' 2 3/4"	6' 10 3/8"	8 3/4" x 16"
3070	2' 11 3/4"	6' 11 1/4"	2' 8 3/4"	6' 10 3/8"	11 3/4" x 16"
3676	3' 5 3/4"	7' 5 1/4"	3' 2 3/4"	7' 4 3/8"	14 3/4" x 19"
4080	3' 11 3/4"	7' 11 1/4"	3' 8 3/4"	7' 10 3/8"	11 3/4" x 22"
50100	4' 11 3/4"	9' 11 1/4"	4' 8 3/4"	9' 10 3/8"	15 3/4" x 22"
DOUBLE SLIDE					
5070	2-2' 5 3/4"	6' 11 1/4"	5' 0"	6' 10 3/8"	8 3/4" x 16"
6070	2-2' 11 3/4"	6' 11 1/4"	6' 0"	6' 10 3/8"	11 3/4" x 16"
7076	2-3' 5 3/4"	7' 5 1/4"	7' 0"	7' 4 3/8"	14 3/4" x 19"
8030	2-3' 11 3/4"	7' 11 1/4"	8' 0"	7' 10 3/8"	11 3/4" x 22"
100-100	2-4' 11 3/4"	9' 11 1/4"	10' 0"	9' 10 3/8"	15 3/4" x 22"

Ceco Sliding Doors may be had single or double as shown. Sliding doors are shipped with hardware detached. Tracks, track brackets, trolleys, guides, binders and stops are shipped separately for assembly with doors in the field. Door frames are not furnished with doors. For details of construction see specifications.

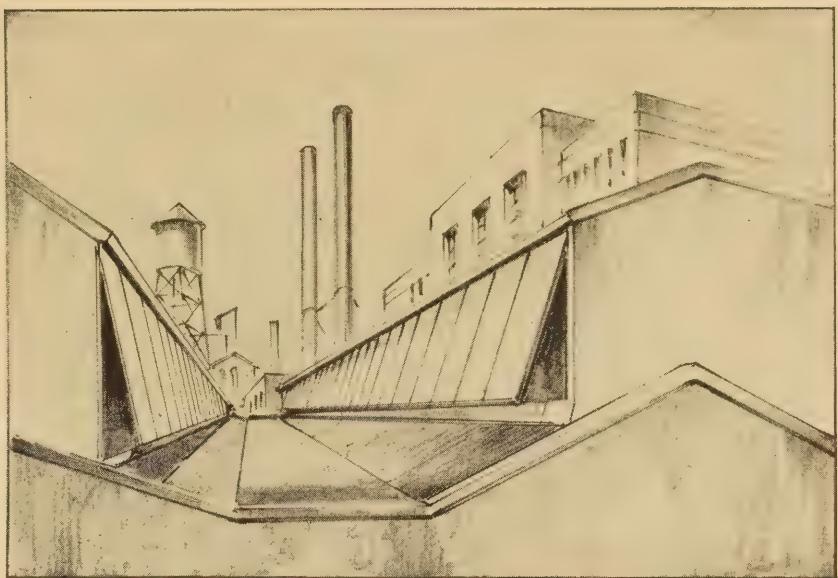


Ceco

INDUSTRIAL STEEL DOORS
SLIDE TYPE

PLATE
35

CONTINUOUS WINDOWS Specifications



GENERAL

All windows shall be Continuous Type as manufactured by the Concrete Engineering Company, Inc., of Chicago, Illinois, or approved equal, as per written approval of the architect and shall be of sizes and types as shown on architect's drawings.

(Continuous windows are generally used in monitor and saw-tooth roof construction. At times they are also used in side-wall construction. Continuous windows should not be set on a slope exceeding thirty degrees from vertical. They provide an easily and rapidly operated continuous window opening.)

(Note: Panels should not exceed 20'0" in length.)

MATERIAL

All sections shall be especially designed, hot-rolled, new billet steel.

Panel head and end members shall be angles.

Muntins shall be 1 1/4" x 3/16" T's.

Sills shall be especially designed sections with a long down standing leg, bent to make close contact with the building construction.

CONSTRUCTION

Panels shall be joined end to end with channel shaped member by means of bolting.

Muntins shall be spaced two feet on centers.

At the ends of all swing sections next to the building construction, there shall be provided 1'0" panels.

Where called for on plans, provide 2'0" wide storm panels. Storm panels shall be secured to head and sill with steel clips, and shall underlap the swing section and shall be provided at the sill with a continuous drip set over the sill flashing.

HARDWARE

All continuous windows shall be top hung on heavy malleable iron butts, spaced approximately four feet on centers. Butts shall be rigidly riveted to head angle furnished with bolts for attachment to building girts.

Fixed windows shall be attached to building with heavy angle clips at head and with suitable straps at sill.

STRUCTURAL SUPPORT

All structural work for the support of steel windows shall be provided by another contractor.

ERCTION

All windows shall be erected by the Concrete Engineering Company, Inc., in openings prepared by others.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

(Note: Sheet metal flashing at heads, sills, and ends of runs is not furnished by the window manufacturer, and should be provided for in the Roofing and Sheet Metal Specifications.)

PAINTING

All windows shall be given one coat of gray mineral paint before shipment.

(Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.)

(Note: Windows erected by the Concrete Engineering Company will be field painted by them if specified.)

GLASS AND GLAZING

(Note: Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.)

All windows shall be glazed from the outside, all glass being set in a bed of putty and secured by angle clips furnished by the window manufacturer.

Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

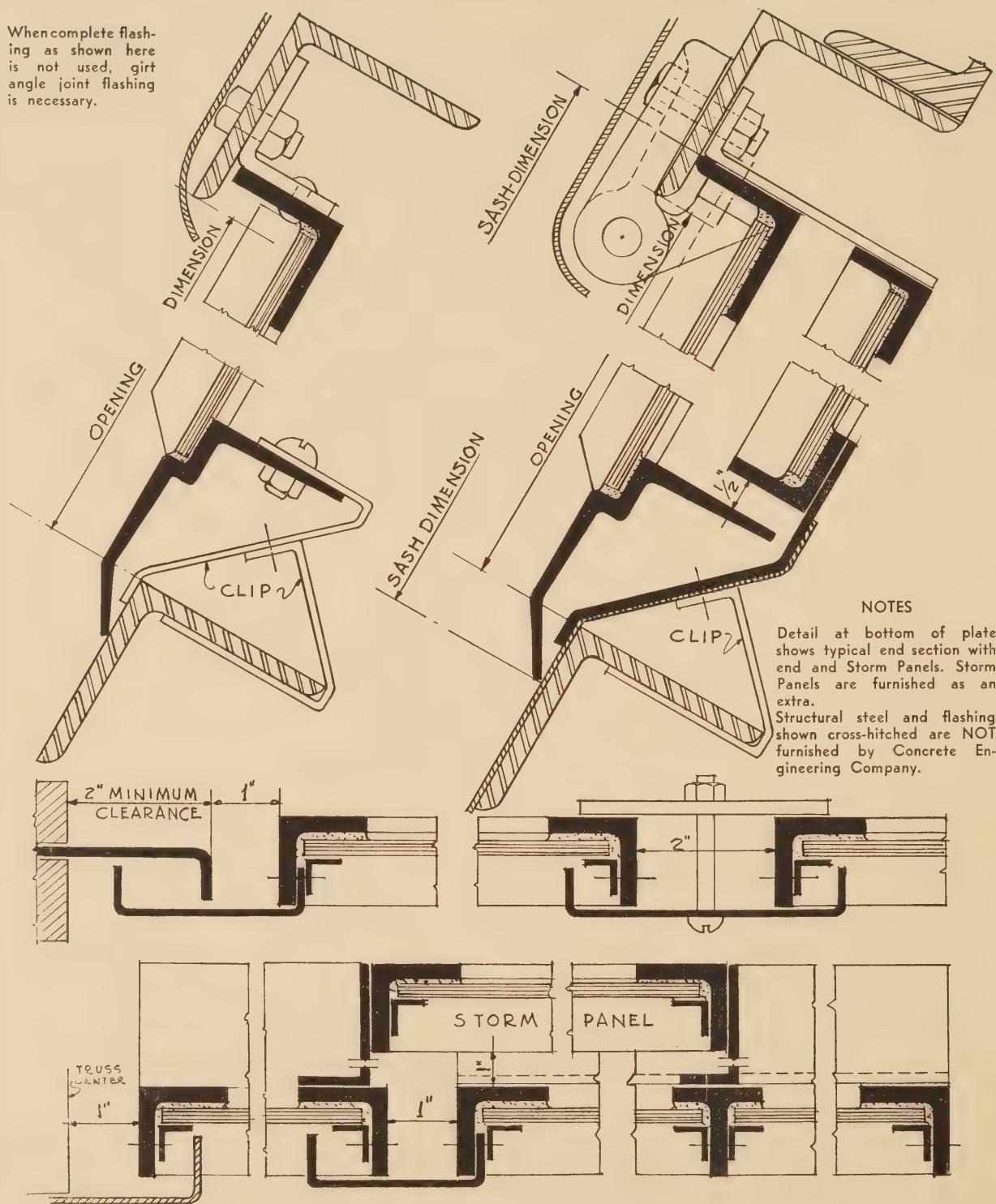
Glass shall be 1/4" rough wire.

CONTINUOUS FIXED WINDOWS

(Note: The specifications for Continuous Fixed Windows are the same as that for Continuous Top Hung Windows, except that all window units are stationary—no swing sections. Heavy steel angle clips bolted to the window head and building girt are substituted for the butts. Steel sill clips, furnished with the window and shipped flat, are bolted to the sill of the window and bent around the steel sill girts to rigidly secure the window in position at the bottom.)

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When complete flashing as shown here is not used, girt angle joint flashing is necessary.

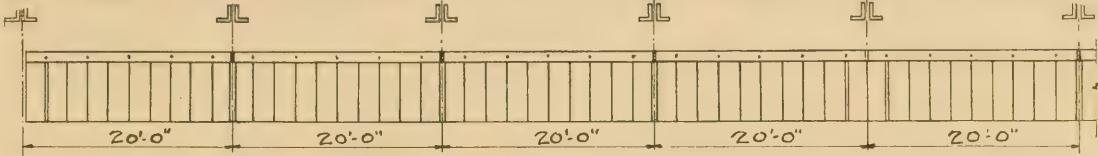


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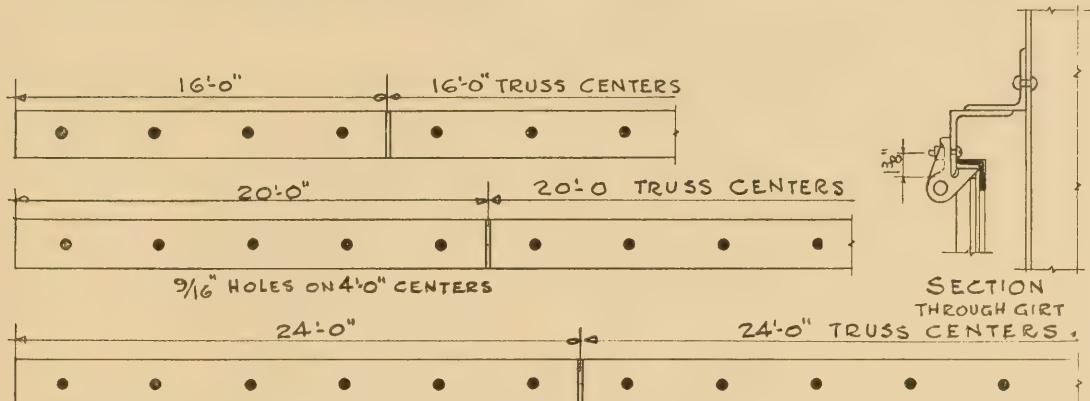
CONTINUOUS WINDOWS
FIXED AND TOP-HUNG SASH

PLATE
36

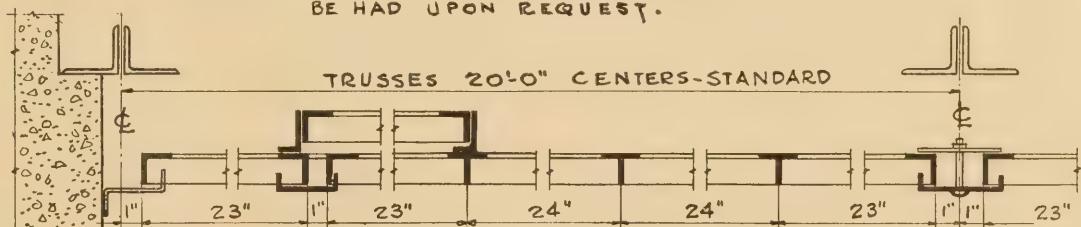
CONCRETE ENGINEERING COMPANY



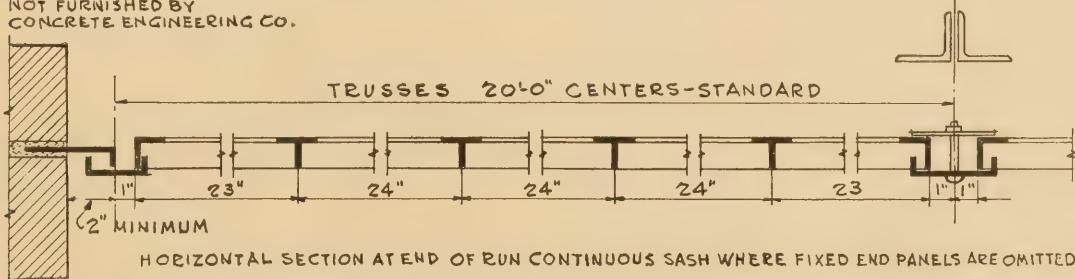
RECOMMENDED TYPICAL LAYOUT OF GIRT PUNCHING FOR STANDARD 20'-0" TRUSS CENTERS.



TYPICAL LAYOUT OF GIRT PUNCHING FOR TRUSS CENTERS OF 16'-0"-20'-0" AND 24'-0"
LAYOUT OF GIRT PUNCHING FOR OTHER TRUSS CENTERS MAY
BE HAD UPON REQUEST.



FLASHING
NOT FURNISHED BY
CONCRETE ENGINEERING CO.



HORIZONTAL SECTION AT END OF RUN CONTINUOUS SASH WHERE FIXED END PANELS ARE OMITTED.

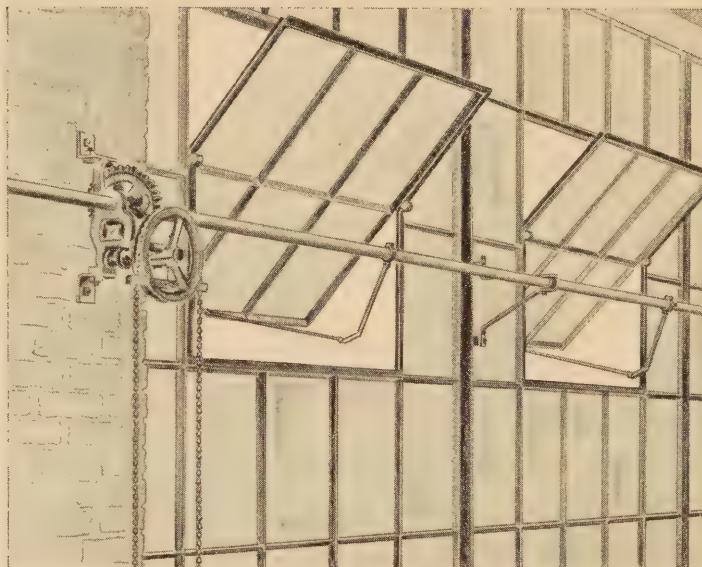
TABLE OF STANDARD OPENINGS AND SASH		TABLE OF GLASS SIZES					
OPENING HEIGHT	SASH HEIGHT	HINGED SASH		FIXED SASH			
		STANDARD LIGHTS	END LIGHTS	STORM LIGHTS	END LIGHTS	CENTER LIGHTS	
2' 10 1/2"	3'-0"	23 3/8" x 32 3/4"	22 3/8" x 32 3/4"	23 3/8" x 31 1/4"	22 3/8" x 32 3/4"	23 3/8" x 32 3/4"	
3' 10 1/2"	4'-0"	23 3/8" x 44 3/4"	22 3/8" x 44 3/4"	23 3/8" x 43 1/4"	22 3/8" x 44 3/4"	23 3/8" x 44 3/4"	
4' 10 1/2"	5'-0"	23 3/8" x 56 3/4"	22 3/8" x 56 3/4"	23 3/8" x 55 1/4"	22 3/8" x 56 3/4"	23 3/8" x 56 3/4"	
5' 10 1/2"	6'-0"	23 3/8" x 68 3/4"	22 3/8" x 68 3/4"	23 3/8" x 67 1/4"	22 3/8" x 68 3/4"	23 3/8" x 68 3/4"	

Ceco

CONTINUOUS WINDOWS
GIRT PUNCHING AND HORIZONTAL SECTIONS

PLATE
37

MECHANICAL OPERATORS



Operators are divided into two classes—First, those which use a sliding horizontal pipe shaft, known as Tension devices—Second, those which use a revolving shaft, which are known as Torsion devices.

The Ceco Tension Operator No. 1 is used on long runs of continuous top hung sash.

Standard 1" pipe is used for the sliding shaft or tension member, and this is operated by a fully enclosed worm and gear power station controlled by an endless hand chain.

The connections to the sash are made by means of scissor-type lifting arms.

The Ceco Tension Operator No. 1 is designed for either manual operation or motor driven, as required.

In cases where long runs of center-pivoted sash are to be controlled by one device from the end of the run—a tension operator may be used, and this is known as Ceco Tension Operator No. 2.

This device consists of the enclosed type worm and gear power with chain control and a sliding pipe shaft equipped with specially designed swivel sash connections of the channel bar type for attaching to the top rail of each vent.

This device may also be equipped with motor control if desired.

The torsion operator which uses a revolving shaft is made in several types, each style being applied to the sash for which it is best suited. Torsion operators may be applied to center pivoted sash, top or bottom hinged sash, and projected sash.

The torsion operator has two types of sash connections—one consists of a folding lever and connecting rod, and the other a rack and pinion.

The lever arm type is most commonly used on center pivoted sash, and the rack and pinion is used on either top hinged or bottom hinged sash. The rack and pinion type is also used on long runs of center-pivoted sash.

Either open type or fully enclosed worm and gear powers are furnished, as required.

These torsion operators are controlled by endless hand chains or vertical rods, as conditions may require, and are distinguished from each other by the following numbers.

Ceco Torsion Operator No. 3—Lever Arm type with chain control.

Ceco Torsion Operator No. 4—Lever Arm type with rod and vertical wheel control.

CONCRETE ENGINEERING COMPANY

Ceco Torsion Operator No. 5—Rack and Pinion type with chain control.

Ceco Torsion Operator No. 6—Rack and Pinion type with rod and vertical wheel control.

The Ceco Torsion Operators No. 5 and No. 6 may also be used for controlling short runs of continuous top hung windows.

Motor control can be furnished for all types of operators if desired. The electrical fixtures consist of motor, push buttons, reversing controller, and limit switches.

All wiring, conduits, cut-out switches, and other accessories shall be furnished by the electrical contractor.

One other type of torsion operator that is especially designed to operate groups of center-pivoted sash or top-hinged sash is known as the Ceco No. 7. The power consists of a heavy mitre gear frame and bronze cut gear with threaded bore engaging a threaded steel vertical rod. To this rod special levers are attached which operate the horizontal shafts with lever connections to ventilators.

Where ventilating sash of the top hinged outswinging type are to be operated in groups under limited space conditions for the cross shafts, a spe-

cially designed torsion operator is furnished. This is known as Ceco No. 8. This type, as a rule, has the vertical operating rods and crank box set into the wall, and the cross shafts with screw type sash arm must be confined to the space between the sash and the inside screen.

A minimum space of four inches will accommodate the horizontal fixtures.

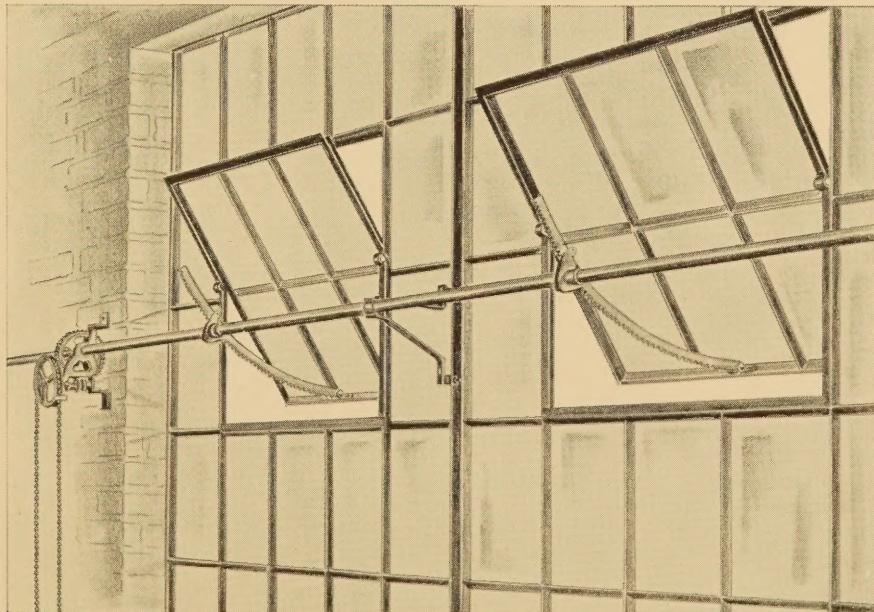
This operator is best suited for vents not to exceed two lights in height and for not more than a 30 degree opening.

Ceco Operators are superior in design, strong, and properly made, and we guarantee same to control the sash for which they are intended in a satisfactory manner.

Our factory is equipped to make operating devices of special design to suit the requirements of all types of ventilating sash.

Ceco Operators are made of the best grade of iron and steel obtainable, and workmanship in assembling, as well as erection in the field, is supervised by well-trained and experienced men.

Unless otherwise specified, all operator material is painted one priming coat of gray paint before leaving the factory.



CONCRETE ENGINEERING COMPANY

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MEYER ADJUSTABLE AND FLANGE
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CECO REINFORCING BARS AND
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CECO WELDED AND TRIANGLE
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CECO METAL LATHING MATERIALS

CECO BAR CHAIRS, SPACERS AND AC-
 CESSORIES

CECO METAL WEATHERSTRIPS

CECO METAL FRAME SCREENS

CECO STEEL JOISTS

CECO ROAD CONSTRUCTION
 MATERIALS

Details and information pertaining to the
 above products are included in separate
 handbooks. You are invited to request them
 if they are not already in your files.

